OCTOBER 1988 Volume 7 Number 10

$2.95

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MONITORING TIMES

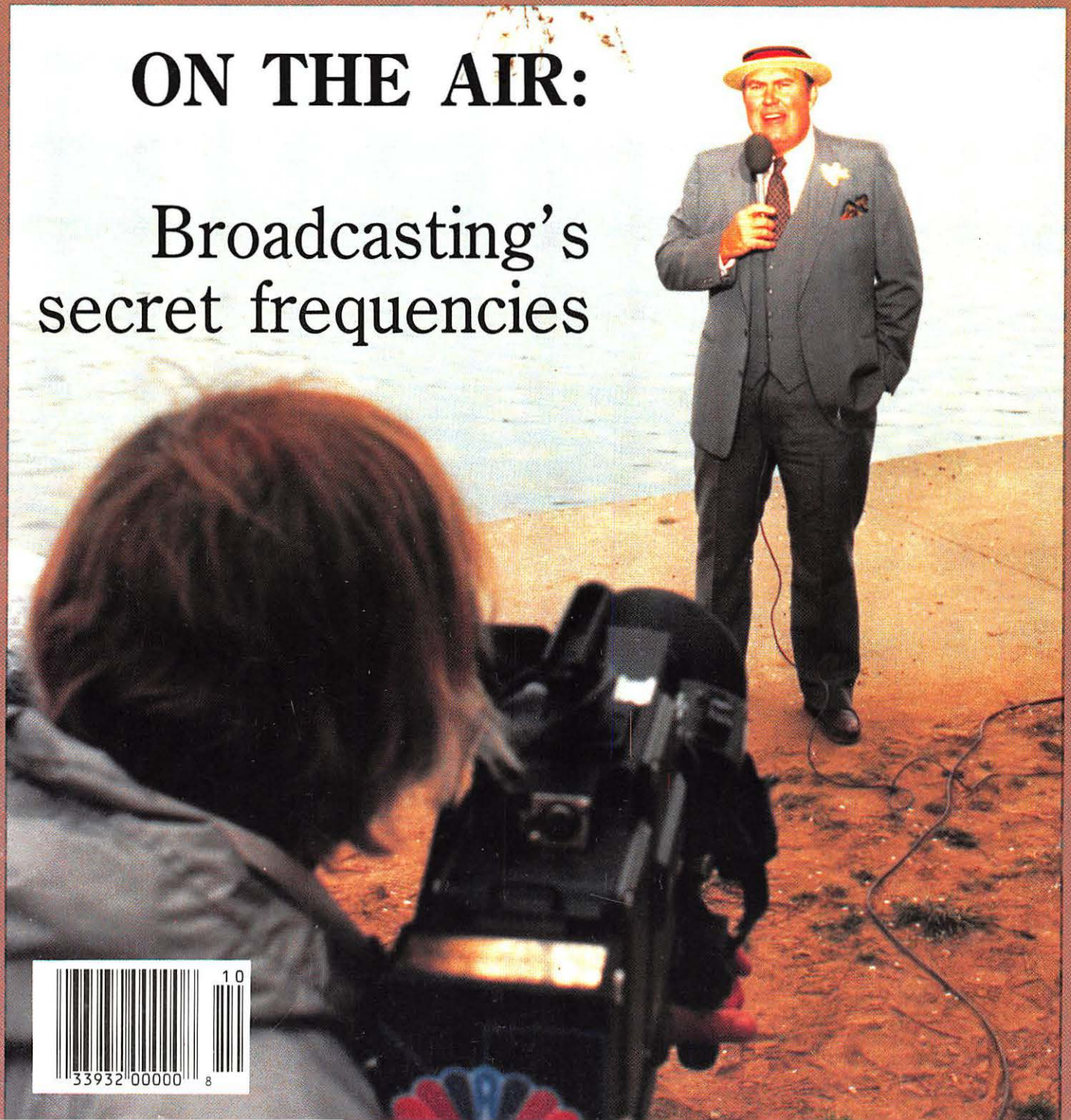
A Publication Of
Grove Enterprises

Inside This Issue:

- Picking up Pitcairn
- Indonesia: Exotic Land, Tough Catch
- Shortwave Wildcard
- Antenna for the Duke
- Build a 1.8-30 MHz RF Preamp

ON THE AIR:

Broadcasting's secret frequencies



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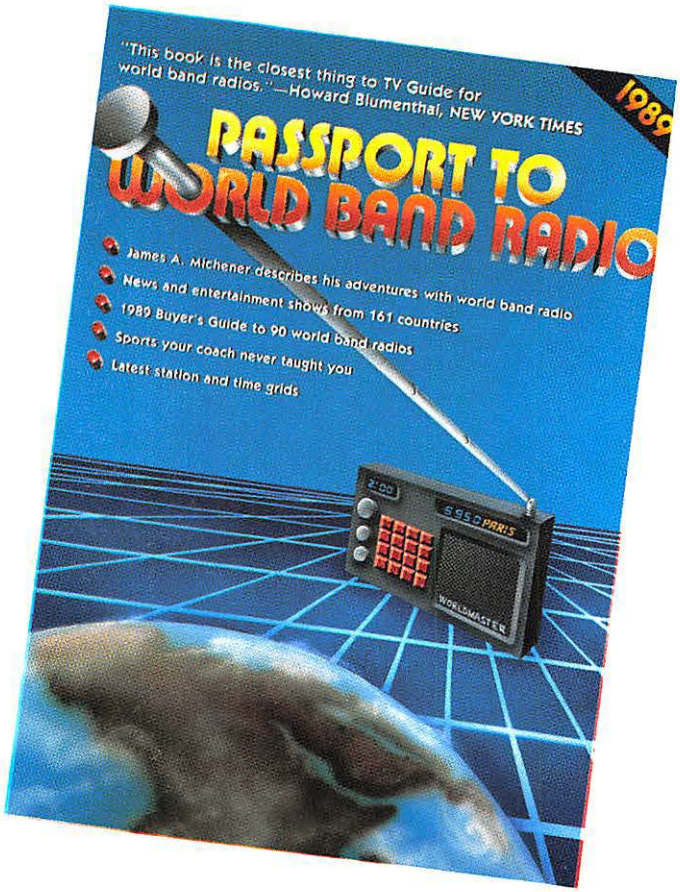
Your Bible for Shortwave Listening Worldwide



"**Passport** is probably the only accessory you'll ever need for your radio."
—**Popular Mechanics**

All New for 1989—Articles, Schedules, Buyer's Guide

This latest and expanded edition of North America's leading guide to shortwave listening is now available throughout the US and Canada. It's all new, it's all shortwave, and it's the fastest-growing publication in the field.

The 1989 **Passport to World Band Radio** covers shortwave listening from nearly every conceivable angle: by frequency, by country . . . and, new for 1989, an hour-by-hour guide to favorite programs in English. For DXing, there are **Passport's** exclusive Blue Pages, which provide you with a myriad of details for every transmitter known to be on the air.

No other publication comes close. Everything you want is there—at a glance.

There's also a wealth of articles on everything from reception conditions to tuning in Air Force One to how world band radio saved an American engineer's life in Iran.

There's more. Larry Magne's acclaimed annual test reports—now a **Passport** exclusive—cover the latest in world band portables and shortwave communications receivers. Fully ninety models are rigorously lab tested and evaluated by a panel of experienced listeners. Nothing is held back. The Buyer's Guide even evaluates the latest in antennas and enhanced fidelity.

At electronics dealers and bookstores everywhere. See why—in only four years—**Passport** has surpassed all others to become the publication of choice for tens of thousands of listeners worldwide.

Passport to World Band Radio
Box 300A
Penn's Park, PA 18943

Vol. 7, No. 10 October 1988

MONITORING TIMES

Ben says, "To get the real dirt first, listen to your radio!" - p.6

Unexplored territory - Indonesia's broadcasting maze - p.14

Take the mystery out of buying that new receiver - p.38

History - today's and yesterday's - at Davis-Monthan Air Force Base - p.40

A 1.8 to 30 MHz tunable receiver preamp to build - p.94

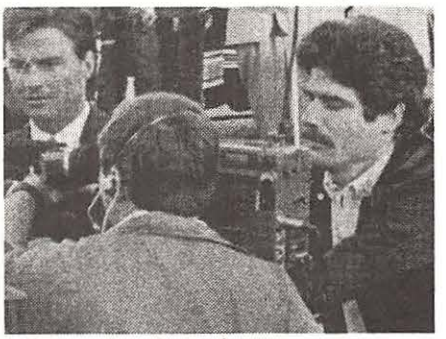
DEPARTMENTS

MONITORING TIMES (ISSN 0889-5341) is published monthly for $18 per year by Grove Enterprises, Inc., PO Box 98, Brasstown, NC 28902 (ph.1-704-837-9200). Second class postage paid at Brasstown, NC, and additional mailing offices. POSTMASTER: Send address changes to Monitoring Times, PO Box 98, Brasstown, NC 28902.

ON THE COVER: Today Show's weatherman Willard Scott on location. While he's in front of the camera, radios are buzzing behind the scenes. Above, top photo: Willard hams it up as Ben Franklin (Photos courtesy NBC *Today Show*)

Inside this Issue

• For most people, one of the news media's least endearing habits is its relentless poking through other people's business. The media grilling of Vice Presidential candidate Dan Quayle turned a lot of people off late this past summer. So what if you could somehow turn the tables on the media? Get a chance to see them without their make-up on, as it were? • **John Combs**, who last wrote in *Monitoring Times* about the exciting world of TV DXing, this month turns his attention on the media. As usual, John's got lots of great frequencies to monitor. So get the scanner ready and tune in the media with *Broadcasting's Secret Frequencies*.



• Over on the shortwave side of the house, a lot of DXers are turning away from Latins as their primary target. A lack of cooperation on the part of the broadcasters -- some report response rates to their reception reports as low as 15 percent -- has gotten a lot of people to turn their antennas from south to west -- west to Indonesia. Here is a land so strange with so many places as yet still untouched, that the *Christian Science Monitor* said it "serves to remind you that outer space is not the only place left for explorers." Indonesian **Jalan Kebon Subrata**, along with a number of radio's best DXers, tries to piece together a portrait of what is often called the world's largest -- and most Byzantine -- government-owned broadcasting system.

• William Poundstone, in his book, *Bigger Secrets*, tells an unusual tale: ham radio operators are reporting contacts with a South Pacific-based amateur operator who calls himself Martin Brandeaux. Brandeaux, speculates Poundstone, is none other than reclusive actor Marlon Brando, who is said to be broadcasting from his South Pacific paradise hide-out. OK. So it's hardly a story that will make the hair turn up on the back of your neck like an episode of the *Twilight Zone*. But it does point out some of the unusual things you can find on the shortwave bands. • Like, for instance, Tom Christian (pictured) -- a direct descendant of the H.M.S. Bounty mutineer of the same name. **John Boston** takes you on a trip to Christian's home of Pitcairn Island and tells you how you can hear -- or make contact with -- this piece of history.

• Larry Magne, having completed the new 1989 edition of the popular *Passport to World Band Radio* book, is now taking a well-deserved break in the south of France. But before he left, Larry dug up a pair of special bargains for readers of *MT*. Two nationally-known radios have been discontinued and -- if you look closely -- you'll have the chance to pick up yet another bargain from Panasonic. Magne, the man who originated the shortwave equipment review almost two decades ago -- there are imitators but none as good -- has the details. • In fact, *Monitoring Times* has the latest on virtually all types of radio monitoring, from longwave to shortwave to signals that come from space. It's no wonder that *Monitoring Times* is the fastest-growing full-spectrum communications magazine in America. Join us for another look at the world's most fascinating medium!

MONITORING TIMES

Published by
Grove Enterprises
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LETTERS

Editor's Preface

Several years ago, I answered a letter from a radio listener in India. Nothing unusual about that. Three months passed. And suddenly, the mailbag was filled with letters from India. Some wanted radios; many others cash and still others, pornographic magazines.

Dozens of women wrote, too. Many presented themselves as prospective brides (not surprisingly, all pointed out they were avid radio enthusiasts) and sent along pictures of themselves standing in front of their modest huts.

At first I tried to answer all of them. But when it became apparent that the flood of mail was increasing instead of subsiding, I finally gave up. In the end, over 1,000 letters arrived here from the subcontinent. Apparently, that first letter writer sold my address to a nationally-distributed Indian pen-pal magazine.

While the volume of letters was unusual, such requests are not. We get them all the time at *Monitoring Times*. Few, if any, make it into the pages of the magazine. You see, if we print these requests for cash, we somehow give them credibility -- something we cannot prove they deserve.

Such is the case with a letter from Radio Dublin Limited. But this time we relented. Radio Dublin Limited is the parent organization for Radio Dublin International, often referred to as "Ireland's quasi-official shortwave broadcast outlet." Perhaps you've had the chance to hear them on 6910 kHz.

R.Dublin Requests Help

"This year," says Eamon Cooke, the station's director, "marks the 22nd anniversary of Radio Dublin. It also marks the first time we're asking for help from our listeners.

"Soon the Irish authorities will be issuing licenses to the many stations currently in operation. These licenses will be for AM and FM

operation but not shortwave. Radio Dublin has been the only operator of a 24 hour-a-day shortwave service. To secure a license for continued operation will undoubtedly involve courtroom battles with the authorities and much expense. We also hope to increase our power so that you can receive us better in the United States.

"Perhaps *Monitoring Times* readers could donate something small to our fund to improve our shortwave service. Any donation will help."

While, as is usually the case, we can't specifically endorse Radio Dublin's request for financial assistance, we did, because of the station's long track record, decide to present it for your consideration. Their address, should you choose to help, is P.O. Box 2077, Dublin 8, Ireland.

Johnny Reb with a Handheld

Another anniversary celebrated this year was that of the Civil War battle of Gettysburg, Pennsylvania. Reader Ron Bruckman KMD3GJ of Hampstead, Maryland, attended the three-day reenactment of the battle, some six miles southwest of the fight's actual location. Amateur radio, said Ron, played an important part in the ceremonies.

"Ham operators were stationed at the battle site and were walking around with their portables, assisting those who needed help on those hot, dry days. I know I was monitoring 147.33 MHz on my HX-1000 and if it wasn't for the directions I heard, I probably would still be sitting in the six-mile backup. Using my ham radio, I got in the back way with no wait at all! A fantastic 'well done' to all the people who made it possible for this bit of history to take place."

Caribbean Calling

"A group of contest veterans" is how Danny Eskenazi K7SS, describes the group seeking to break the world record this year in the *CQ* Worldwide DX contest. The group, led by AI6V, will be on DXpedition to Aruba (a new separate country), formerly a part of the Netherlands Antilles. They will use the call P4OV for the October 29-30th event.

If you're a shortwave listener and want to hear some real pile-ups on the ham bands, give them a listen. In this case, the P4OV team is hoping to talk with at least 18,000 different hams in 48 hours. As you might imagine, these things often get pretty crazy.

The Aruba Dxpedition will be active on all bands -- 160 through 10 -- simultaneously. That's 1.8 to 2, 3.5 to 4, 7 to 7.3, 14 to 14.35, 21 to 21.45 and 28 to 29.7. Lower side band predominates on the latter three ranges; upper sideband on the former three.

Getting a Legge Up

Roger Legge is back! That might not mean a lot to you, but to shortwave listeners with an interest in Soviet DXing, it's a gift from God. Roger publishes the *UHN USSR High Frequency Broadcast Newsletter* and it's one of the biggest bargains in shortwave: eight issues for three -- no typo -- dollars. The publication is irregular but when it does come out, it's packed with information on all Soviet shortwave broadcasts, including Kiev, Vilnius and so forth -- along with transmitter sites. Check it out. Roger's address is P.O. Box 214A, Etlan, VA 22719.

[More "Letters" on page 100]

COMMUNICATIONS

Restrict Unrestricted Part-15 Device Bands

So you're listening to shortwave and there, coming out of the speaker along with the BBC is the sound of a neighbor's baby crying. Or maybe you're a ham and your conversation becomes intertwined with that of someone using a nearby cordless phone. These and literally hundreds of other possibilities may come to be if a current FCC Notice of Proposed Rule Making (NPRM) comes to pass. Fortunately, however, strong opposition has developed.

The NPRM currently proposes "unrestricted operation on most frequencies" of radio signal emitting devices like cordless phones, baby monitors, remote-control toys, as well as "unintentional" emitters such as computers and receiving equipment and so forth. These devices are commonly known as "Part 15 devices."

The bands in which they may operate under the NPRM include 13.553-13.567, 26.96-28.00, 40.66-40.70, 902-928, 2400-2483.5 and 5725-5975 MHz (the first two being in the shortwave bands) and 24.0-24.25 GHz. The American Radio Relay League (ARRL) called such products "The ultimate in interference potential, because co-channel operations in residential areas, in close proximity to amateur stations, is proposed."

Everyone, of course, had strong objections to allowing Part 15 devices to operate on *their* portion of the radio spectrum. In fact, according to Linear Corp., a maker of signalling products, the total amount of spectrum space requested to be restricted or off-limits to Part 15 devices came to 4220.95 MHz or 85% of the available spectrum between 10 and 5000 MHz.

Bar Code Radio

Modern technology has come to the rescue of department store clerks. Where stock inventory control used to be a labor-intensive pain in the pen, it can now be fully automated by reading between the lines of a bar code.

Yes, that perplexing little cluster of parallel lines such as these from the cover of *Monitoring Times* does more than make a cash register ring; when read by an optical pen and transmitted by radio, the data bits can alert the store owner to a barrage of information about the products on his shelf.

A recent glance at the portable system in our local Wal-Mart store revealed a light pen coupled to a computer which was, in turn, connected to a Maxon hand-held transceiver. A quick snap of the battery compartment lid revealed the frequency: 467.875 MHz.

FCC records show a cluster of low power frequencies available in this part of the spectrum for a variety of business applications. In fact, every 25 kilohertz from 467.750 through 467.925 is available for this type of use.

Looking through business license applications, we would suspect that quite a number of chain stores are going this route. Many clusters of low power 467 MHz frequencies are being assigned to these major stores nationwide.

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Your Own TV Show

You have a great concept for a TV show. But maybe it's something that wouldn't fly on network TV. Now what? Is there a fairy godmother for such bright idea?

The answer is an encouraging, "yes." Her name is the Corporation for Public Broadcasting (CPB) -- or more specifically, the CPB TV program fund -- and she's actually *looking* for TV shows that probably would not make it without special help.

"Anybody can be considered," says CPB's acting program fund director, Gene Katt. "The criteria is the *idea*" although TV experience does help. Shows that are chosen are seen nationally on Public Television.

"In the past, individual shows or series have gotten around $25,000 or less," says Katt, "but we may move that up and make it fewer shows with more money." Three rounds of solicitations are scheduled each year. For more information, write to: Open Solicitation Round, CPB TV Program Fund, 1111 16th St. N.W., Washington, DC 20036. Ask to be put on the mailing list for their newsletter.

Anyone in for a TV show on radio monitoring?

Stereo TV Sales Up

Although growth in the sales of color TVs to dealers was flat during the summer (compared to the same period in 1987), all was not doom and gloom.

According to the Electronics Industries Association's Consumer Electronics Group, sales of color sets featuring built-in MTS stereo decoders increased 22.8 percent for the year-to-date compared to like periods in 1987.

Hard Line on Satellite Unscrambling

In what *Federal Communications TechNews* editor Benjamin Cobb calls "the latest episode of one of the

most bizarre stories in the history of consumer electronics," the FCC announced that it is stepping up enforcement against equipment that defeats General Instrument Corp.'s VideoCipher II (VC II) scrambler. The unit is used to make signals unusable to television receive-only (TVRO) earth stations.

TVRO owners purchase the VC II units for $300-$400. They then are supposed to pay subscription fees to the purveyors of scrambled programming. However, the VC II, according to Cobb, "has been extensively compromised." Sixty to seventy percent of the estimated one million units in operation are believed to be unscrambling programs without permission.

General Instruments has already successfully prosecuted some "TV pirates" and the FCC is sending warning to 19 vendors thought to be marketing illegal VC II technology.

Israel Radio Trims Foreign Languages

With the exception of English and French, foreign language programs are to be removed from all day-time slots on Israel's domestic radio. The new policy took effect over the summer.

According to Victor Grajewski, head of Israel Radio's external services and broadcasts for immigrants, programs intended for new immigrants are not as effective in the daytime hours as they are at night.

Israel Radio broadcasts in 12 languages, including Yiddish, Moroccan Arabic (Mugrabi) and Ladino, which together with Hebrew are regarded as the traditional languages of the Jewish people.

As for broadcasts overseas, "easy Hebrew" has been dropped from the schedule and was replaced with Yiddish.

Uzi Narkiss, the director of the World Zionist Organization's Information Department -- which helps finance these programs -- said he knew nothing about it.

Radio Shack Enters Ham Market

A franchise manager from Texas reports that Radio Shack plans to release shortly a ten-meter ham transceiver to sell in the $280 price range. It will probably be similar (if not identical) to the Uniden HR2510 reviewed in this month's *MT*.

If the product is successful, we may expect to see Tandy enter into the two-meter market later. Their emphasis on ham radio began with the Novice Enhancement package last year and the recently organized Tandy Radio Amateur Club for employees.

Donald K. DeNeuf, WA1SPM, 1906 - 1988

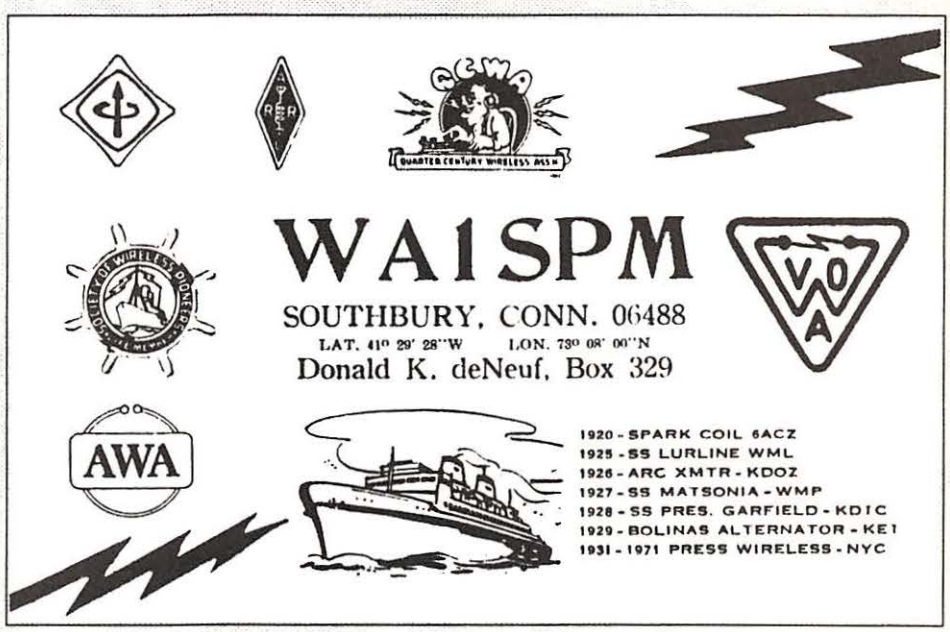
Readers and pioneers of radio communications were saddened by the death of Don deNeuf, a frequent contributor to *Monitoring Times* and a talented radio historian. A former president of Press Wireless, Don was a recipient of the Marconi Memorial Gold Medal of Honor from the Veteran Wireless Operators Association for his outstanding service to radio communications.

A licensed amateur since 1920 (WA1SPM), Don held a commercial first class radio operator's license when he went to sea as a shipboard radio operator, and was honored with the coveted Knight Officer Order of Merit from the Italian government for his work with the Italian Radio Maritime Medical Service.

A member of the FCC Industry Advisory committee, Don was also a life member of the Institute of Electrical and Electronic Engineers (IEEE), a fellow of the Radio Club of America and president of the Society of Wireless Pioneers.

Even in retirement, Don remained devoted to humanitarian causes as a volunteer ambulance driver for his community. His many contributions will be long remembered and deeply appreciated.

Credits: *Christian Science Monitor, Federal Communications TechNews, Jerusalem Post*



"I shudder at leaving a vacuum on some of the history of past telecommunications!" Don DeNeuf made sure we wouldn't forget.

Broadcasting's Secret Frequencies

by John F. Combs

Behind the scenes at your local radio and TV stations

Americans spend countless hours with their radios and TVs. Some of the programming encountered is witty, informative, or uplifting; some of it is mindless pablum. When you encounter the latter, turn on your scanner and enjoy the action behind the scenes!

The accompanying table summarizes the Broadcast Auxiliary (BA) frequencies. These are used by radio and TV stations for a myriad of purposes. They range from the upper reaches of 25 MHz to 26 MHz (available on most shortwave radios) to the 160, 450 and 455 MHz ranges. Let's take a look at what you might hear.

What's to Hear?

♦ **Newsgathering Operations:** News means big business and big bucks these days! Newscasts are a major income source for local TV stations, and many a failing AM radio station has been saved by opting for an all-news/talk format. On many TV stations, newscasts are the only locally-produced live programming.

On the broadcast auxiliary frequencies, you can hear reporters being dispatched to the scene of breaking news stories, interviews being set up with local figures, and photographers rushing to get that dramatic eye-popping video that keeps ratings high. News helicopters can also be heard communicating with the studio. In a way, you can hear the six o'clock news taking shape as the day goes on.

You may not always hear *all* the details of a breaking news story being discussed. After all, news is a very competitive business and stations in the same market make a point of monitoring each others' news frequencies. The station with a major "scoop" will naturally be reluctant to reveal too much over the radio.

This competitive spirit can produce some rather humorous transmissions. You may sometimes hear rival stations taking verbal shots at each other over the air, knowing full well that the target of their good-natured sarcasm is listening in!

♦ **Remote Radio Broadcasts:** Another of the more common uses of the BA frequencies is for live radio remotes. The next time your favorite DJ goes "on location" at a car dealership, shopping mall, or county fair, put your scanner into "search" mode and find that remote frequency!

Listening to the frequency being used as a link between the remote site and the station can be very entertaining, since the mikes tend to stay open even when the remote is not actually on-the-air. You might hear the off-air comments of a bored DJ, or the off-hand remarks of kibbitzers and passers-by.

♦ **TV "Live Shots":** TV stations use the BA frequencies for their live remotes, too. You can hear engineers setting up and adjusting the equipment, producers discussing the shot with production personnel, and the director coordinating the whole thing during the broadcast.

Some stations also use these frequencies for the IFB (Interactive FeedBack) -- the combination of live program audio and director's cues heard by on-camera talent through their little earphones. (Others use telephone hook-ups for the IFB where practicable.)

Some of the most interesting listening comes when a "live shot" doesn't quite go according to plan! Locally, I have heard stations weathering such disasters as losing power at the remote site 30 seconds before air time, having all but one camera fail during a live speech by President Reagan, and having the remote transmitter "fried" by a nearby lightning strike during a golf tournament!

♦ **Traffic Reports:** Those who commute to work during rush hour are grateful for those live helicopter traffic reports! As conditions approach gridlock, knowing of an upcoming accident or other obstruction can save valuable time on the road.

Traffic 'copters use BA frequencies to relay their reports back to the studios. In some larger cities, an independent organization may provide traffic reports to several stations on the same frequency, under a name like "Metro Traffic" or "Traffic Watch."

Usually, the traffic frequency is two-way, and you may hear the chopper pilot and station DJ engaging in banter and chit-chat between traffic reports. Quite frequently, these little conversations become rather raunchy, and can be far more amusing than anything you'll hear over the station itself!

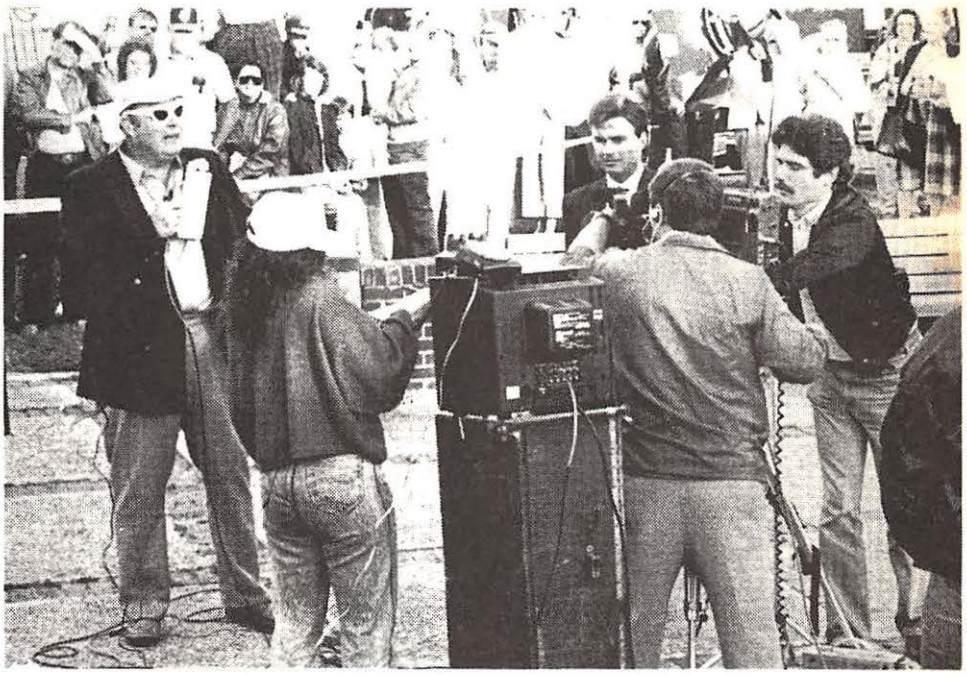
On a more practical note, raw information about accidents and traffic jams is often fed to the station some time before the actual report is broadcast. For the mobile scanner monitor, those precious extra minutes could mean the difference between arriving at work on time and sitting immobile for half an hour!

Other uses for these frequencies include such things as studio-to-transmitter links (STLs), paging, autopatch facilities (less common in this age of the cellular phone), telemetry, and point-to-point feeds.

Types of Systems

From much listening and discussion with other monitors, I have determined that the vast majority of radio systems used on these frequencies are either repeatered or straight simplex; two-frequency duplex operations are rarely heard. Many stations find that locating the base antenna high on their transmitting tower enables them to cover the area on simplex. (This is bad for the monitor as the mobile units won't be heard unless they are within a few miles.) Others find that the increased coverage and reliability of repeaters is worth the price. Stations that serve several widely-dispersed cities may use multiple repeater sites.

Stations in smaller markets (or with smaller operations) tend to have one or two frequencies that are used for everything. Larger operations may include as many as four to six different frequencies, assigning separate channels to production, engineering, or news.



When network TV personalities like NBC's popular "Today" show weatherman Willard Scott come to town, normally vacant BA frequencies may become active.

You Can Hear the "Big Boys" Too!

The major radio and TV networks use the same bands of frequencies for their own productions and day-to-day operations. If you are fortunate enough to live in a city where network bureaus or studios are located, this adds to the listening fun.

Network remotes make use of these frequencies, too. Even a relatively simple remote, such as NBC weatherman Willard Scott's visit to the Shrimp Festival in Fernandina Beach, Florida (see photo), may require a dozen or more network personnel to make it come off smoothly. And how do they communicate? Why, by radio, of course.

So, to keep abreast of all the activity "behind the cameras" in your area, start searching the broadcast media frequencies to see which are active. Then if the networks come to town for a sporting event or major news story, start scanning those normally vacant BA frequencies. You just might hear a CBS News producer frantically looking for Dan Rather!

The frequencies in the 25-26 MHz range are rarely used these days. In addition to the following assignments, many STLs operate in the 942-952 range. In repeatered operations, the input is usually in the 455 MHz area and the output on a corresponding frequency 5 MHz lower, but this is sometimes reversed.

Radio stations use BA frequencies to relay live remotes back to the studios.

BROADCAST MEDIA (BA) FREQUENCY ASSIGNMENTS

(All frequencies in MHz)

25.87	450.05	455.05
25.91	450.0875	455.0875
25.95	450.1	455.1
25.99	450.1125	455.1125
26.03	450.1375	455.1375
26.07	450.15	455.15
26.09	450.1625	455.1625
26.11	450.1875	455.1875
26.13	450.2	455.2
26.15	450.2125	455.2125
26.17	450.2375	455.2375
26.19	450.25	455.25
26.21	450.2625	455.2625
26.23	450.2875	455.2875
26.25	450.3	455.3
26.27	450.3125	455.3125
26.29	450.3375	455.3375
26.31	450.35	455.35
26.33	450.3625	455.3625
26.35	450.3875	455.3875
26.37	450.4	455.4
26.39	450.4125	455.4125
26.41	450.4375	455.4375
26.43	450.45	455.45
26.45	450.4625	455.4625
26.47	450.4875	455.4875
	450.5	455.5
	450.5125	455.5125
	450.5375	455.5375
161.64	450.55	455.55
161.67	450.5625	455.5625
161.7	450.5875	455.5825
161.73	450.6	455.6
161.76	450.6125	455.6125
	450.65	455.65
	450.7	455.7
	450.75	455.75
166.25	450.8	455.8
	450.85	455.85
	450.9	455.9
170.15	450.925	455.925

mt

A live TV remote is a complicated affair. Production and engineering personnel make extensive use of BA frequencies for communication and coordination.

National Tower Company

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25AG4	model 4 top section	$73.50
45G	10' section	$133.00
45AG3 & 4	model 3 or 4 top section	$136.00
55G	10' section	$166.50
M200	10' mast 2" o.d	$13.50
BX-40	40' self supporting [6 sq ft]	$196.00
BX-48	48' self supporting [6 sq ft]	$250.00
BX-56	56' self supporting [6 sq ft]	$334.50
BX-64	64' self supporting [6 sq ft]	$431.50
HBX-40	40' self supporting [10 sq ft]	$226.50
HBX-48	48' self supporting [10 sq ft]	$308.00
HBX-56	56' self supporting [10 sq ft]	$392.50
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TH2MK3S	2 element 'Thunderbird'	$202.00
TH7DXS	7 element 'Thunderbird'	$537.00
EXP 14	Explorer 14 triband beam	$365.00
QK710	30/40 M conv. Exp 14	$91.00
	Monoband	
103BAS	'Long John' 3 element 10 mtr	$78.00
105BAS	'Long John' 5 element 10 mtr	$156.00
155BAS	'long John' 5 element 15 mtr	$240.00
204BAS	4 element, 20 meter	$299.90
205BAS	'Long John' 5 element 20 mtr	$408.00
7-1S	'Discoverer' rotary dipole 30/40mtr	$160.00
7-2S	'Discoverer' 2 elem 40 meter beam	$379.00
7-3S	converts 7-2S to 3 elem beam	$238.00
	Multiband Verticals	
18HTS	'Hy-Tower' 10 thru 80 meters	$502.00
14RMQ	roof mt kit for 12 AVQ,14AVQ and 18ATV/WB	$42.00
18VS	base loaded, 10 thru 80 meters	$35.00
12AVQS	trap vertical 10 thru 20 meters	$56.00
14AVQ/WBS	trap vertical 10 thru 40 meters	$76.00
18AVT/WBS	trap vertical 10 thru 80 meters	$123.00
	Multiband Doublets	
18TD	portable tape dipole 10-80 meters	$139.00
2BDQS	trap doublet 40 and 80 meters	$71.00
5BDQS	trap doublet 10 thru 80 meters	$139.00
	VHF ANTENNAS — Beams & Verticals	
23BS	2 meter 3 element beam	$24.50
25BS	2 meter 5 element beam	$29.50
28BS	2 meter 8 element beam	$42.00
214BS	2 meter 14 element beam	$50.00
64BS	4 element 6 meter beam	$76.00
V-2S	colinear gain vertical 138-174 MHz	$54.00
V-3S	colinear gain vertical 220 MHz	$51.00
V-4S	colinear gain vertical 430-470 MHz	$61.00
GPG2A	base, 2 mtr, ground plane 3 dB	$28.00
	VHF & UHF Mobiles	
HR144GRI	figerglass 2 mtr, 6dB gain 3/8-24 mt	$72.00
HB144GRI	HyBander 2mtr 6dB gain 3/8-24 mt	$59.00
HB144MAG	HyBander 2 meter	$22.50
BN86	ferrite balum for 10-80 meters	$23.00
	OSCAR LINK ANTENNA	
215S	70cm, 435 MHz	$89.00
218S	Complete Oscar link system	$231.00

CUSHCRAFT ANTENNAS

AOP-1	complete Oscar Link system	$169.00
AP8	8band ¼wave vertical	$152.00
A3	3 element triband beam	$246.00
A743	7 & 10 MHz add on kit for A3	$81.00
A744	7 & 10 MHz add on kit for A4	$81.00
4218XL	18 element 2 mtr, 28.8' boomer	$125.00
R4	10,12,15,20 meter vertical	$204.50
A4S	4 element triband beam	$344.00
AV4	40-10 mtr. vertical	$94.50
AV5	80-10 mtr. vertical	$111.00
ARX2B	2 mtr 'Ringo Ranger'	$39.25
ARX450B	450 MHz 'Ringo Ranger'	$39.25
A144-11	144 MHz, 11 ele, VHF	$50.50
A147-11	11 element 146-148 MHz beam	$50.50
A147-22	22 element 'Power Packer'	$141.75
A144-10T	10 element 2 mtr 'Oscar'	$54.00
A144-20T	20 element 2 mtr 'Oscar'	$77.50
215WB	15 element 2 mtr. 'Boomer'	$81.00
220B	17 element FM 'Boomer'	$101.25
230WB	144-148MHz, 30 element	$216.00
32-19	19 element 2 mtr 'Boomer'	$101.25
424B	24 element 'Boomer'	$81.00
10-4CD	4 element 10 mtr 'Skywalker'	$124.75
15-4CD	4 element 15 mtr 'Skywalker'	$145.00
20-4CD	4 element 14 MHz 'Skywalker'	$310.50

HUSTLER ANTENNAS

4BTV	40-10 mtr. vertical	$79.00
5BTV	80-10 mtr. vertical	$105.00
6BTV	6 band trap vertical	$124.00

ROTORS

Alliance	HD73 [10.7 sq ft]	$104.00
Alliance	U110	$47.00
TELEX	AR40 TV, 3 sq ft	CALL
TELEX	CD45-II [8.5 sq ft.]	CALL
TELEX	HAM IV [15 sq. ft]	CALL
TELEX	T2X [20 sq. ft.]	CALL

CABLE

[2-18 & 6-22]	4080 - per foot	$0.18
[2-16 & 6-20]	4090 - per foot	$0.35
1108	RG8U Min-8 low loss foam per foot	$0.17
1198	RG8U Columbia superflex 100'	$31.00
1180	RG8U Low loss 100% bonded foil shield 88% tin copper braided sheild -per foot	$0.35

Regency®

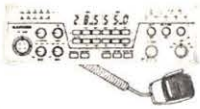
INF5 . . . . $89.90
AC Powered TURBO SCAN*, pre-programmed by state to receive any type of police transmission plus fire and weather, scans at 50 channels per second, digital display, instant weather

TS1 . . . . . **$199.90**
Same except 35 channels 11 band.

Z45 . . . . . $99.90
45 Channel 7 band w/aircraft, programmable, 45 preprogrammed channels, search or scan, alarm clock, priority, permanent memory backup, ch lockout, scan delay AC/DC with both cords

TS2 . . . . . **$269.90**
75 Ch 12 band w/800MHz, AC/DC

RANGER



10 meter TRANSCEIVER, 25 watt, can be programmed to split transceive, SSB, CW, AM, FM, programmable scanning, fully automatic, noise blanker, 2 3/8H, 7¾W, 11D

AR3500 . . . . . **$349.00**

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25 WATT 10 Meter Transceiver, all mode operation, backlit multi function LCD meter, frequency lock, auto squelch, NB, RF gain, PA, external speaker jack, 7¼Wx9¼Dx2 3/8H

HR2510 . . . . . **$239.90**

MIDLAND®

77-202B . $79.90
Electronic tuning, Loc/DX switch, SWR, variable mic gain, High/Low tone, ANL, PA, illuminated S/RF/SWR meter, instant Ch 9, screw-in mic

77-250 . . $99.90
'POWER MAX' ETR tuning w/40% more sensitivity, LED bar meter SWR, variable RF gain, mic gain, instant Ch 9 & 19, ANL, PA

uniden®

PRO530E . $79.90
Euro-styled, squelch, NB, ANL, mic & RF gain, S/RF LED meter, TX/RX LED's, instant Ch 9 & 19, backlit front panel, PA mode

PRO640E $129.90
Mobile AM/SSB, AN & NB, dim switch, RF ATT switch, Hi cut, mic gain, PA, 12 segment LED meter, TX/RX & SWR LED's, clarifier control

TENNA PHASE III POWER SUPPLIES

PS3 . . . . . **$15.90**
Output 13.8V DC, 3 amp constant 5 amp surge, electronic overload protection w/instant auto reset, fuse protected

PS4 . . . . . **$19.90**
Fully regulated, 13.8 VDC, 4 amps constant with surge protection, overload protection w/instant auto reset

PS7 . . . . . **$24.90**
Fully regulated, 7 amp constant,10 amp surge capacity

PS12 . . . . . **$34.90**
Fully regulated, 10 amp constant 13 amp surge, electronic overload protection w/instant auto reset

PS20 . . . . . **$64.90**
Fully regulated, 25 amp surge capacity, 13.8 VDC, 20 amp constant, with meter

PS25 . . . . . **$79.90**
Regulated 4.5-15VDC-25 Amp constant 27 amp surge, instant auto reset, dual meter for current & voltage

PS35 . . . . . **$99.90**
Same as above except, 35 amp constant, 37 amp surge, adjustable from 10 to 15 volts

uniden® Bearcat

BC70XLT
$159.90
20 Channel 10 band, priority, channel lockout, scan delay, automatic squelch, LCD display, programmable, track tuning, direct channel access, rechagable nicad battery pack, with charger/acapter.

BC800XLT . $249.90
40 Ch 12 band, **800 MHz,** aircraft & weather, priority, track tuning, scan delay, auto search, direct channel access, auto squelch, channel lockout, AC/DC

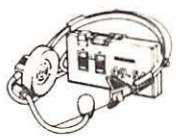
BC145XL $92.90
16 Ch 10 band, programmable, 2 digit LED, priority, review, direct Ch access, track tuning, built-in delay, memory backup, Ch lockout, weather, AC/DC

BC760XLT $279.90
100 Ch 12 band w/**800MHz,** weather & aircraft, base/mobile, priority, Ch lockout, auto search, delay, programmable, memory lock, DC

BC55XLT	10 chan, 10 band, HAND HELD	$114.90
BC100XLT	100 Ch 11 band hand held w/battery	$199.90
BC200XLT	200 Ch 12 band, 800MHz, hand held	$279.90
BC175XL	16 ch. 11 band aircraft	$154.00
BC210XLT	40 Ch, 11 band, aircraft & weather AC/DC	$179.90
BC560XLT	16 Ch 10 band mobile	$99.90
BC580XLT	100 Ch 11 band mobile,, programmable	$219.90

MAXON....$26.95

Model 49SA - 49 MHz, FM 2-WAY RADIO hands free operation, voice activated transmit up to ½ mile. Batteries optional



model 49B **$34.95**
same features as 49SA except uses "AA" nicad batteries and comes with battery charger

ASTATIC

D104 SILVER EAGLE **$69.90**
Chrome plated base station amateur microphone. Factory wired to be easily converted to electronic or relay operation. Adjustable gain for optimum modulation.

ETS D104 SE **$99.90**
NEW, same as above with end of transmision 'Roger Beep'

RADAR DETECTORS

UNIDEN

RD500 . . . . . **$69.90**
Dual conversion superhet, city/hwy, LED's, audible alarm, compact

RD9 . . . . . **$114.90**
2 power cords, travel case, dual conversion superhet, city/hwy, audible & LED alerts, mini size.

RD7 . . . . . **$79.90**
Dual conversion superhet, mini size, LED's, audible alert

RD9XL **$149.90**
Superhet w/two power cords carry case, City/Hwy, mini size

TALKER **$169.90**
Record your own message up to 8 sec long, selectable audio alerts, City/Hwy, X & K band, carry case with 2 cords

BEL

XKR100 . . . . . **$43.90**
LED alert, tone alert, X & K band, dash/visor

976 . . . . . **Vector 3** **$159.95**
NEW TRI-BAND, X, K & Ka, sequential LED's & city/highway setting.

876 . . . . . **VECTOR** **$94.90**
GAas diodes, sequential LED, City/Hwy, audio alert.

847 . . . . . **$139.90**
EXPRESS REMOTE, X & K band, Superhet, 2-way filter, LED & audible alerts.

MAXON

RD2A **$46.90**
Superhet, X & K band, audible & visual alert, city/highway setting

RD3 . . . . . **$59.90**
Long range dual conversion, X & K band, LED's, audible alert w/volume control, antifalsing, city/hwy, dash/visor

RD21 . . . . . **$54.90**
Mini size, audible & visual alert, omni-polarity guard, dash/visor

RD25 . . . . . **$89.90**
Deluxe mini, same as above with sequential LED's

RDXL **$129.90**
CORDLESS, X & K bands, anti falsing, sequential LED's, audible alert, city/hwy, dark/mute switch, with carry case

Picking up Pitcairn

by John Boston

Just about everyone knows that you can tune in spies and smugglers on your shortwave radio. It's the sort of thing that fires the imagination and adds to the mystery of shortwave radio. That sort of thing, however, pales in comparison when you realize that you can also hear Tom Christian, direct descendant of Bounty mutineer Fletcher Christian, operating a ham radio station from lonely Pitcairn Island. It's a tough catch but well worth the effort to hear this bit of history.

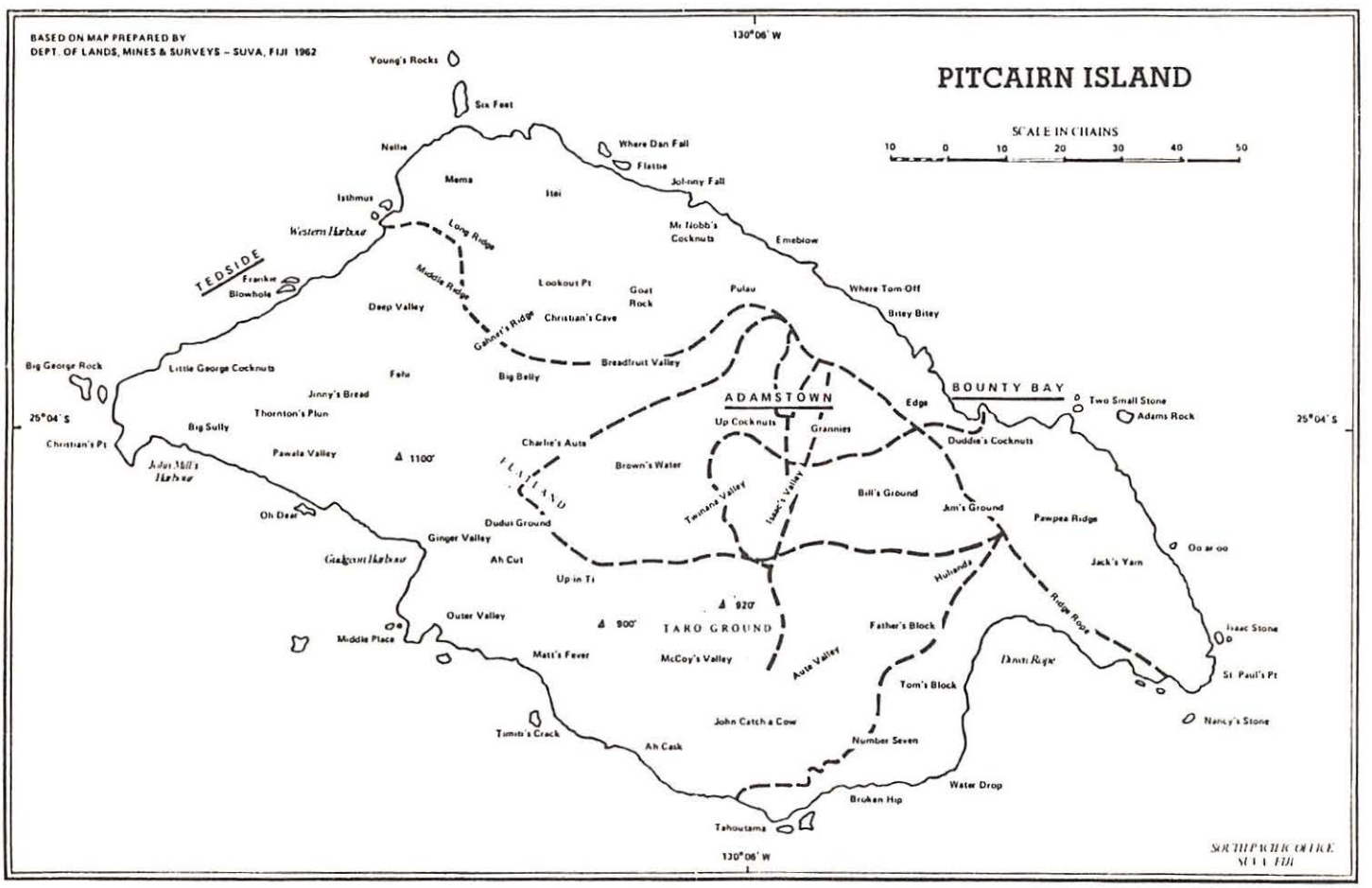
Pitcairn Island, about 1,350 miles east-southeast of Tahiti and halfway between New Zealand and the Americas, is one of the smallest inhabited islands in the world. Size-wise it amounts to a mere 1,120 acres and measures approximately two miles by one mile. Actually, it's the top of a volcano and, like an iceberg only the tip shows above the ocean's surface.

Pitcairn was inhabited by Polynesians centuries ago and was first discovered by Europeans in 1767 when a son of one Major Pitcairn of the British marines spotted it but was unable to make a landing due to the pounding surf.

The story of the Bounty, however, is better known: how Fletcher Christian and others in the crew of HMS Bounty mutinied, set Captain Bligh and 18 others adrift, then sailed to Tahiti. How relations with the Tahitians soured so Christian and nine other crew members plus six Tahitian men and women set sail to look for a place to live. How after two months at sea they checked Pitcairn -- largely in desperation -- and landed there in January 1790.

Stripped

The Bounty was stripped of everything which might prove of any use, grounded and burned to prevent its being sighted by any passing ships. There followed a long struggle and the building of a small settlement. During those early years the Tahitians were more slaves than partners.



Four or five years passed before the settlers began to really accept their isolated situation. By then, though, Christian had died and only four of the original crew were left. Illness, a suicide and a killing in self-defense had, by 1799, left only John Adams from the original crew.

Adams did much to establish a relatively solid community which lived largely by the Church of England's Book of Common Prayer. The small community of Adamstown is named after him.

Making Contact

In 1808 an American sailing captain spotted Pitcairn and two British Naval vessels stopped there in 1814. The captains, though they knew these were fugitives, were so impressed by what had been accomplished they decided to leave well enough alone and made no arrests. From then on, more and more ships called, often bringing rations and gifts.

As the years went by, though, Adams became more and more concerned about the island's ability to support the community. He was in the process of arranging for a move when he died in 1829. The move did eventually happen a couple of years later when the islanders emigrated to Tahiti but it proved to be an unhappy decision. They missed home. Many became ill. Six months after leaving Pitcairn they were back home.

A man named Joshua Hill governed the islanders for a brief time in 1832 and proved something of a dictator. The Captain of the HMS Fly drew up the first Pitcairn constitution in 1838 and the island was incorporated into the British Empire.

By 1856 the population had grown to 194 people and there was, again, fear that the island couldn't support that many. So, emigration was tried again, this time to Norfolk Island. Still, though, there were those who missed home and two years later five Pitcairn families totaling 43 people returned. Just in time, too, for they found the French just settling in, having believed the island abandoned.

Supported by Hams

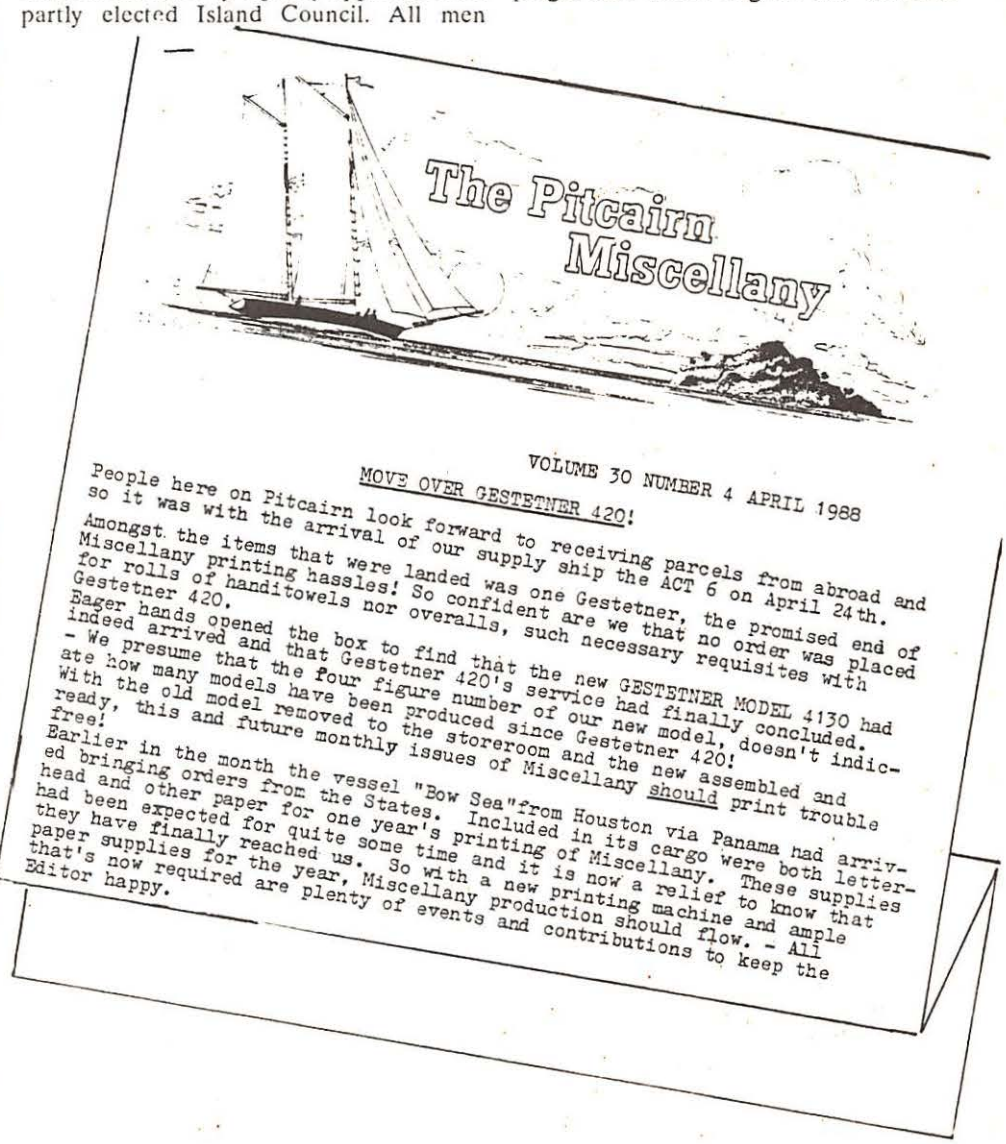
The opening of the Panama Canal in 1914 put Pitcairn right in the line of a direct shipping run to New Zealand so the islanders began to welcome a ship a week, complete with tourists seeking souvenirs. Even with souvenir sales, though, the island's economy didn't begin to improve all that much until it got into the postage stamp business in 1940.

Passenger liners stopped calling in 1968, so the economy today, in addition to stamps, rests on souvenir sales by mail, donations of money and supplies (a lot of help comes from ham operators), fishing and subsistence agriculture. The land is bush and grassland, the forest having been used up long ago.

Pitcairn is administered by the British High Commissioner in New Zealand who also holds the title "Governor of Pitcairn." There is a full local government (the constitution has been changed several times) which is handled by a partly appointed and partly elected Island Council. All men between 16 and 60 must spend a certain amount of time, regularly, on public works, which often means maintenance work on the island's boats.

Education includes compulsory schooling (380 half days per year) for all between 5 and 15. The Church of England gave way to the Seventh Day Adventists in 1887. After the islanders had received Seventh Day Adventist literature for several years they allowed a missionary to come to the island in 1886 and adopted the religion the following year.

As of 1981 the population was just 54 people. Just before World War Two it had peaked at 233 but, thanks to emigration (largely to New Zealand) it had dropped to 86 by 1963. The islanders speak a localized pidgin that mixes English and Tahitian.


The Pitcairn Miscellany

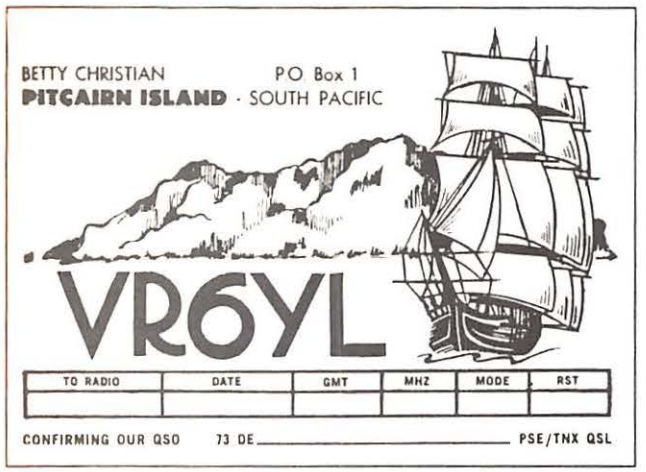
VOLUME 30 NUMBER 4 APRIL 1988

MOVE OVER GESTETNER 420!

People here on Pitcairn look forward to receiving parcels from abroad and so it was with the arrival of our supply ship the ACT 6 on April 24th. Amongst the items that were landed was one Gestetner, the promised end of Miscellany printing hassles! So confident are we that no order was placed for rolls of handitowels nor overalls, such necessary requisites with Gestetner 420.

Eager hands opened the box to find that the new GESTETNER MODEL 4130 had indeed arrived and that Gestetner 420's service had finally concluded. - We presume that the four figure number of our new model, doesn't indicate how many models have been produced since Gestetner 420! With the old model removed to the storeroom and the new assembled and ready, this and future monthly issues of Miscellany should print trouble free!

Earlier in the month the vessel "Bow Sea"from Houston via Panama had arrived bringing orders from the States. Included in its cargo were both letterhead and other paper for one year's printing of Miscellany. These supplies had been expected for quite some time and it is now a relief to know that they have finally reached us. So with a new printing machine and ample paper supplies for the year, Miscellany production should flow. - All that's now required are plenty of events and contributions to keep the Editor happy.



Amateur radio operators Tom and Betty Christian keep regular contact with other hams and Tom operates commercial station ZBP.

It's difficult to say how far Adamstown is from the sea since the map of Pitcairn is measured in "chains" The settlement has about 70 buildings but many belonged to former residents and are in some disrepair. The public square features the courthouse and one of the original Bounty anchors. The church has the Bounty Bible on permanent loan from the Connecticut Historical Society. The dispensary, library and post office all share the same building.

The two page Pitcairn *Miscellany* newspaper had a distribution of 750 copies (as of 1981) and that included mailings to 22 countries and 38 U.S. states.

Station ZBP on the Air

The Pitcairn commercial radio station is ZBP, operated by Tom Christian who has been the island's radio officer since 1958. The station is located perhaps a third of a mile inland, at a place called Taro Ground. A New Zealand radio enthusiast donated a small transmitter in 1936.

Regular communications with the Navy Office in Wellington were established in 1940 and further improvements in the facilities were made in 1944 with a complete rebuilding of the station in 1962.

ZBP has been logged by several U.S. DXers over the past couple of years. Although the station has been reported as late as 0200 it seems to have a schedule that begins around 1900 UTC. Reported frequency usage includes 15.520, 15.718, 18.407, and 18.710 on USB.

Tuning in Tom Christian

Tom Christian can be heard on the amateur radio bands if you listen often enough. His call is VR6TC. Try as early as 0100 and as late as 0600 on various 20 meter frequencies, including 14.180 and 14.234. It's a good idea to keep an ear on the various amateur networks that specialize in covering Pacific area ham DX news and activity. One such is the Pacific Net scheduled at 0200 on 14.313 and 0500 on 14.314 as well as other times.

VR6TC isn't the only ham on Pitcairn. Christian's wife, Betty, is VR6YL. Irma Christian, VR6ID, has a regular schedule with KB6ISL on Mondays and Thursdays at 1700 on either 21.305, 21.280, or 21.295. Kari Young, VR6KY, has been monitored around 2030 on 21.287 and 2100 on 21.340. Kay Brown, VR6KB, is another ham on Pitcairn.

Actually there are two more Pitcairn calls but they are held by nonresidents. Of course, hams are on the air largely on a catch-as-catch-can basis so times and frequencies vary widely and there may be times of no activity at all. Still, a little sincere effort should bring in one or two and perhaps even all the Pitcairn hams.

Readers interested in learning more about the island, as well as hearing transmissions from it, should try to obtain a copy of the book, *The Guide to Pitcairn* (4th edition, 1982), about $5.00, published by the British Consul General in Auckland, New Zealand. It's full of interesting photos, facts, history and other information about the island and the people who so capture our imaginations.

mt

Thanks to Dr. Charles Moser, W6IIS, "Mr. Pitcairn Island," who has done a great deal over the past twenty years to organize support for Tom Christian and his ham station, for providing pictures and other materials for this article.

uniden®

$12,000,000 Scanner Sale

Uniden Corporation of America has purchased the consumer products line of Regency Electronics Inc. for $12,000,000. To celebrate this purchase, we're having our largest scanner sale in history! Use the coupon in this ad for big savings. Hurry...offer ends December 31, 1988.

★★★ MONEY SAVING COUPON ★★★

COUPON COUPON

Get special savings on the scanners listed in this coupon. This coupon must be included with your prepaid order. Credit cards, personal checks and quantity discounts are excluded from this offer. Offer valid only on prepaid orders mailed directly to Communications Electronics Inc., P.O. Box 1045 – Dept. UNI11, Ann Arbor, Michigan 48106-1045 U.S.A. Coupon expires December 31, 1988. Coupon may not be used in conjunction with any other offer from CEI. Coupon may be photocopied. Add $9.00 for shipping in the continental U.S.A.

Regency TS2-T $259.95
Regency INF1-T $119.95
Regency INF5-T.....$79.95
Regency R1090-T.....$114.95
Regency UC102-T $109.95
Regency RH606B-T.....$419.95
Regency RH256B-T.....$294.95
Bearcat 200XLT-T $249.95
Bearcat 100XLT-T $184.95
Bearcat 800XLT-T $249.95
Uniden TALKER-T $179.95

★★★★ VALUABLE COUPON ★★★★

NEW! Bearcat® 760XLT-T

List price $499.95/**CE price $244.95/SPECIAL**
12-Band, 100 Channel • Crystalless • AC/DC
Frequency range: 29-54, 118-174, 406-512, 806-956 MHz. Excludes 823.9875-849.0125 and 868.9875-894.0125 MHz.
The *Bearcat* 760XLT has 100 programmable channels organized as five channel banks for easy use, and 12 bands of coverage including the 800 MHz. band. The *Bearcat* 760XLT mounts neatly under the dash and connects directly to fuse block or battery. The unit also has an AC adaptor, flip down stand and telescopic antenna for desk top use. 6-5/16" W x 1⅜" H x 7⅜" D. Model **BC 590XLT-T** is a similar version without the 800 MHz. band for only $194.95. CTCSS squelch option now available.

SALE! Regency® TS2-T

List price $499.95/**CE price $269.95/SPECIAL**
12-Band, 75 Channel • Crystalless • AC/DC
Frequency range: 29-54, 118-175, 406-512, 806-950 MHz.
The *Regency* TS2 scanner lets you monitor Military, Space Satellites, Government, Railroad, Justice Department, State Department, Fish & Game, Immigration, Marine, Police and Fire Departments, Aeronautical AM band, Paramedics, Amateur Radio, plus thousands of other radio frequencies most scanners can't pick up. The *Regency* TS2 features new 40 channel per second *Turbo Scan*™ so you wont miss any of the action. Model **TS1-T** is a 35 channel version of this radio without the 800 MHz. band and costs only $199.95.

Regency® RH256B-T

List price $799.95/**CE price $299.95/SPECIAL**
16 Channel • 25 Watt Transceiver • Priority
The *Regency* RH256B is a sixteen-channel VHF land mobile transceiver designed to cover any frequency between 150 to 162 MHz. Since this radio is synthesized, no expensive crystals are needed to store up to 16 frequencies without battery backup. All radios come with CTCSS tone and scanning capabilities. A monitor and night/day switch is also standard. This transceiver even has a priority function. The RH256 makes an ideal radio for any police or fire department volunteer because of its low cost and high performance. A *60 Watt* VHF 150-162 MHz. version called the **RH606B-T** is available for $429.95. A UHF 15 watt, 16 channel version of this radio called the **RU156B-T** is also available and covers 450-482 MHz. but the cost is $454.95.

★★★ Uniden CB Radios ★★★

The *Uniden* line of Citizens Band Radio transceivers is styled to compliment other mobile audio equipment. Uniden CB radios are so reliable that they have a two year limited warranty. From the feature packed PRO 810E to the 310E handheld, there is no better Citizens Band radio on the market today.

PRO310E-T *Uniden* 40 Ch. Portable/Mobile CB...$83.95
PRO330E-T *Uniden* 40 Ch. Remote mount CB...$104.95
PRO500D-T *Uniden* 40 Channel CB Mobile $38.95
NINJA-T PRO310E with rechargeable battery pack.$99.95
B10-T 1.2V AA Ni-cad battery for Ninja (set of 10)...$20.95
KARATE-T *Uniden* 40 channel rescue radio $53.95
PRO510XL-T *Uniden* 40 channel CB Mobile.....$38.95
PRO520XL-T *Uniden* 40 channel CB Mobile.....$56.95
PRO540E-T *Uniden* 40 channel CB Mobile.....$97.95
PRO640E-T *Uniden* 40 channel SSB CB Mobile ...$137.95
PRO710E-T *Uniden* 40 channel CB Base $119.95
PRO810E-T *Uniden* 40 channel SSB CB Base ...$174.95

★★★ Uniden Radar Detectors ★★★

Buy the finest *Uniden* radar detectors from CEI today.
TALKER-T *Uniden* talking radar detector.....$184.95
RD7-T *Uniden* visor mount radar detector $99.95
RD9-T *Uniden* "Passport" size radar detector $114.95
RD9XL-T *Uniden* "micro" size radar detector.....$144.95
RD25-T *Uniden* visor mount radar detector.....$54.95
RD500-T Uniden visor mount radar detector.....$74.95

Bearcat® 200XLT-T

List price $509.95/**CE price $254.95/SPECIAL**
12-Band, 200 Channel • 800 MHz. Handheld
Search • Limit • Hold • Priority • Lockout
Frequency range: 29-54, 118-174, 406-512, 806-956 MHz. Excludes 823.9875-849.0125 and 868.9875-894.0125 MHz.
The *Bearcat* 200XLT sets a new standard for handheld scanners in performance and dependability. This full featured unit has 200 programmable channels with 10 scanning banks and 12 band coverage. If you want a very similar model without the 800 MHz. band and 100 channels, order the **BC 100XLT-T** for only $189.95. Includes antenna, carrying case with belt loop, ni-cad battery pack, AC adapter and earphone. Order your scanner now.

Bearcat® 800XLT-T

List price $549.95/**CE price $259.95/SPECIAL**
12-Band, 40 Channel • No-crystal scanner
Priority control • Search/Scan • AC/DC
Bands: 29-54, 118-174, 406-512, 806-912 MHz.
The Uniden 800XLT receives 40 channels in two banks. Scans 15 channels per second. Size 9¼" x 4½" x 12½." If you do not need the 800 MHz. band, a similar model called the **BC 210XLT-T** is available for $178.95.

Bearcat® 145XL-T

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A hazy look at INDONESIA's unexplored broadcasting maze

by Jalan Kebon Subrata

Spanning some two million square miles of ocean, most of Indonesia remains effectively off limits to all but the most stubborn foreign travelers.

Michael Rockefeller, who visited the archipelago some 25 years ago, disappeared in 1961, reportedly the victim of cannibalism. More recent explorers, such as the British team of Lawrence and Lorne Blair, survived but faced the dangerous and the unusual at every step of the way. The trip was, says Lorne, "years of adventure through a land of waking dreams."

This is a place inhabited by the Toraja tribe, a people who believe their ancestors descended from the skies in starships; of the cannibalistic Asmats and the "dream wanderers" of Borneo, who navigate trance-like without the use of stars or maps.

"Dynamo Jack," an ethnic Chinese who the Blair brothers met in Java, was said to be able to emit electric shock from his hands like an eel -- a talent he says derived from Taoist teachings. After hearing about the feat for years, the Blairs finally persuaded him to go on camera. He ignited a newspaper without a match. Indeed, in this land of flesh-eating Komodo lizards, deadly Moluccan blue-ringed octopus and tusk-size nose ornaments, technological culture seems to evaporate the further east you go.

Complex Land: Complex Radio

Indonesia is a land truly kept obscure -- even from itself -- by a formidable array of legal, geographic and linguistic barriers. The government knows this. And in an effort to breech these barriers, they have turned to radio.

Radio Republik Indonesia (RRI) has as its task the unenviable job of linking the 13,000 island nation together. The result is an incredibly complex, even Byzantine network of stations that is, by all accounts, the largest government-owned broadcasting system in the world.

We say "Byzantine" because few people, even among Indonesian broadcasters themselves, seem to know exactly how their system is structured. As Senior Indonesian DXer John Bryant says, "It's not entirely rational." In any case, it does have a clear mission: "to contribute to and improve the nation's culture as well as promote international understanding, friendship and cultural exchange."

Big Voice Weakly Heard

On the international level, Radio Republik Indonesia offers the difficult-to-hear Voice of Indonesia on shortwave. (Check the frequency section for correct times.) The "Song of the Coconut Islands" launches broadcasts in English as well as Arabic, Bahasa Malaysia, Chinese, French, German, Indonesian, Japanese, Spanish and Thai. The transmitters are only moderately powered -- 100 kw -- by today's 500 kw standards.

But international service is the least of RRI's problems. Information from the stations themselves has been known to differ not only on major points but even in the way a network is spelled. From here it all goes downhill into a quagmire of "yes's", "maybe's" and "I'm not sure's" -- with the "I'm not sure's" leading the pack.

Standing in front of the RRI studios (left to right) announcer Rosiana, Mr. Yon Maryono, Head of Programmes, Tineke Roron representing listeners from Jakarta, and Rina Amahorseya, a member of Radio Listeners Club Indonesia. Right photo: An announcer for RPD in West Java.

A Sample Log From RRI Nusantara I Jakarta

Freq.	2450 kHz at	2158-1720 UTC (Programme Kota)
	3277 kHz at	2200-0100 (Sun 'til 0500), 1000-1720 UTC (Programme Khusus)
	4774 kHz at	2200-0100 (Programme Khusus), Sun 0100-0200 (Programme Khusus)
		0800-1500 (Prgr Khusus/Prgr Nasional), 1500-1720 UTC (Prgr Nasional)
	6045 kHz at	2200-0100 (Sun 'til 0500), 1000-1720 UTC (Prgr. Nasional)
	7270 kHz at	2200-0100, 0500-1720 (Sun 2200-1720 UTC) Prgr. Nasional
	9680 kHz at	2200-0100, 0500-1720 (Sun 2200-1720 UTC) Prgr. Nasional
	11770 kHz at	2200-0100, 0500-0800, 1000-1720 UTC (Prgr. Nasional)
	11865 kHz at	2200-0100, 0500-0800, 1000-1720 UTC (Prgr. Nasional)

The National Program

Radio Republik Indonesia produces a national program (Program 1) that runs three times a day at 2200-0100 (Sundays until 0800), 0500-0800, and 1000-1705 UTC on 2307, 3277, 6045, 7270, 9680 and 11865 kHz as well as some AM and FM frequencies. News is carried at the top of each hour.

RRI's programs for a total of 1080 hours a week -- a good deal of it music. But its main objectives are to give unbiased news, to reflect Indonesian opinion and project Indonesian life, culture and developments in science and industry. News bulletins, current affairs programs, political commentaries and topical magazine programs form the main part of the output. The result is often very "VOA-ish" with such fare as "The Family Planning Hour" not uncommon. Almost all of the regional stations carry these programs.

So-called "Special" programs run from 0100-0200 and sometimes from 0800-1500 UTC on 4774 kHz plus FM. The same channel also relays Program 1 for its 2200-0100 UTC broadcast. A separate metropolitan program runs 24 hours a day on 2405 kHz. All of this comprises but level one of the three main RRI levels of station.

The Regional Maze

In addition to the national service, there are also five different *Nusantara* or networks. Each of these, numbered one through five, is designed for a different region of the country. For example, RRI Nusantara Satu ("1") is located in Medan and covers Sumatera. RRI Nusantara Dua ("2") is based in Yogyakarta and covers Jawa and Bali; RRI Nusantara Tiga ("3") is in Banjarmasin and broadcasts for Kalimantan; RRI Empat ("4") transmits from Ujung Pandang for Sulawesi and Nusa Tenggara and RRI Lima ("5") is in Jayapura, broadcasting for Maluku and Irian Jaya.

Mixing It Up: Changing Frequencies

Twice each day it is necessary to change the operating frequency of the transmitters. Like all shortwave broadcasts, RRI's are reflected off the ionosphere and ionospheric conditions vary according to the time of day. The frequency changes take a little over a minute and across the islands, receivers are retuned. The time for the change-overs is 8:00 am and 5:00 pm local time.

Tingkat One's and Two's

The next level of stations are generally called called Radio Pemerintah Daerah Tingkat Satu or RPDT-1. These are stations designed for provincial -- much like our states -- coverage and usually identify as RPDT 1 plus the name of the province.

The lowest level in the chain are the RPDT 2s -- Radio Pemerintah Daerah Tingkat Dua. These stations generally serve counties or cities. There are generally six or seven "counties" within each province. In some cases, the word "kabupaten" is added to or substituted for Tingkat. Both indicate "district."

The RPD (Radio Pemerintah Daerah) or local government stations began in 1966. At present there are 110 of them, all of which are in D.I. Aceh, North Sumatera, Riau Islands, West Java, Central Java, East Java, Nusa Tenggara Eastern, West Kalimantan, South Kalimantan and Maluku Islands. As with all RPD radio services, the local stations are financed by the government.

RPD local stations provide local programs for between 10 and 14 hours a day and for the rest of the time they relay programs, like national news, from RRI's national service. Local newsrooms take care of news of interest to the city they are broadcasting from. Still, each is free to choose its own program policy within the framework of the RRI's general policies.

Operator? Give me RDP Tingkat Dua

Recently more time on RDP local stations has been given to consumer problems and there has been greater use of "phone-in" programs. Here, members of the community are given the opportunity to express their views -- which are generally considered as better suited to local rather than national radio (RRI). Stations located in areas with significant ethnic minorities provide special programs for them, very often in their own languages.

Education programs also form an important part of locally produced material and each station has an education producer responsible for programs of adult and continuing education.

Advertising Accepted

Each station has a local radio advisory council and an education sub-committee.

In some areas, RPD stations have encouraged the formation of local chamber orchestras. One station even organized a

Local programming is determined by a board of editors such as this one: from left, Sugijono, Marsudi, Mohamad Barly, Sukarno.

Station	Time (UTC)	Frequency (kHz)	Power kw
RPDK Deli Serdang	2255-0500, 0600-1600	3993	0.175
RPDT2K Asahan	2255-0500, 0600-1700	3325	0.15
RPDT2K Langkat	2255-0500, 0600-1700	4255	0.1
RPDT2K Karo	2255-0500, 0555-1710	4166	0.1
RPDK Labuhan	2255-0555, 0655-1655	3985	0.125
RPDT2 Tembilahan	2255-0455, 0555-1655	3750	0.1
RPDT2 Bengkalis	2255-0455, 0555-1655	3500	0.1
RPDKM Sukabumi	2255-0455, 0500-1700	2522	1
RPDK Cianjur	2300-0500, 0600-1600	2325	0.5
RPDK Lebak	2300-0500, 0600-1700	3385	0.375
RPDK Serang	2300-0500, 0600-1700	3102	1
RPDKM Bogor	2300-0500, 0600-1700	2480	0.6
RPDK Karwang	2255-0455, 0555-1655	3305 parallel MW 1475	0.5
RPDK Subang	2255-0500, 0600-1715	3725	1.5
RPDK Cirebon	2200-0500, 0600-1710	2415	0.5
RPDK Kuningan	2200-0500, 0600-1715	2485.5 and 4000	0.3
RPDK Ciamis	2200-0500, 0600-1715	2315	0.5
RPDK Tasikmalaya	2200-0500, 0600-1715	3920	0.5
RPDK Garut	2200-0500, 0600-1715	4000, 1562.5	0.3
RPDK Pandeglang	2255-0455, 0555-1715	3330	0.5
RPDK Bekasi	2200-0455, 0555-1655	2405	0.75
RPDT2K Purwakarta	2200-0455, 0555-1655	4265	0.3
RPD Sturada Indramayu	2255-0500, 0600-1600	2527	0.1
RPDT1 Jawa Timur, Surabaya	2200-0155, 0455-1715	3050	1.5
RPDKM Probolinggo	2200-0155, 0455-1715	2475	0.75
RPDK Lumajang I	2230-0455, 0555-1710	3402	0.3
RPDK Lumajang II	2200-0455, 0555-1715	2830	0.3
RPDKM Lumajang	2200-0155, 0455-1700	3167	0.5
RPDK Jember	2155-0455, 0555-1710	3214	0.1
RPDK Banyuwangi	2155-0455, 0555-1710	3573	0.25
RPDK Kediri	2155-0455, 0555-1715	4105	0.25
RPDK Blitar	2155-0455, 0555-1700	4087.5	0.25
RPDKM Blitar	2155-0455, 0500-1700	3800	1
RPDK Bangkalang	2155-0455, 0500-1710	2325	0.25
RPD Khusus Reboisasi Pemerintah	2155-1710	4598	1.5
RPD Singa Ambara Raja	2200-0500, 0555-1705	2336	0.75
RPD Gianjar	2255-0455, 0555-1655	3200	0.75
RPD Klungkung	2255-0500, 0555-1705	2400	0.75
RPD Karang Asem	2255-0500, 0600-1700	2540	0.075
RPDK Sumbawa	2255-0500, 0600-1700	3775	0.075
RPDK Bima	2255-0555, 0655-1700	3422	0.2
RPDK Lombok Timur	2255-0455, 0555-1655	3102	0.2
RPDK Lombok Tengah	2255-0455, 0555-1655	3560	0.2
RPDK Ende	2200-0400, 0500-1555	2695.5	0.5
RPDT2K T.T.S. Sae	2155-0400, 0500-1555	2500	0.3
RPDK Sambas	2100-0400, 0500-1500	3400	0.25

brass band championship!

More and more, commercials are finding their way onto Indonesia's airwaves. Heaviest concentrations are found at the lower rungs of the broadcasting maze but advertisement, although rare, can even be heard on the national service (RRI).

Under the terms of its License and Agreement, RPDs may not, without consent of the Home Secretary, broadcast any commercial advertisement or sponsored program. The broadcasting of advertisements during RPD transmissions is governed by the Independent Broadcasting Authority Act, which prohibits the sponsoring of programs by advertisers, but allows the program companies to sell time for advertising. Advertisement may be inserted at the beginning or end of programs or during "natural breaks" in the programs.

They must be clearly distinguishable as such and be recognizably separate from the programs and the time given to them must not be so great as to detract from the value of the programs as a medium of information, education or entertainment. The amount of advertising on RPD stations ranges from an average of five minutes to eight minutes an hour.

The independent RPD stations are normally limited to a maximum of ten minutes of advertising each hour.

Legal Pirates?

Here again is where Indonesian broadcasting gets hazy. There are also a number of *amatir* or pirate stations on the air. Sometimes referred to as "independent" they are primarily on AM and FM but some are thought to inhabit the shortwave bands as well.

Figuring It Out

Having some trouble keeping up with all of the Tingkats and RRs? Don't feel bad. You're not alone. Not only does the Indonesian system of broadcasting boggle the average -- and even sophisticated DXer -- the average Indonesian is no different.

Don't be discouraged, though. Spin the dial and try for some of these elusive yet catchable, fascinating yet frustrating, tiny little bit of the world's largest government-owned broadcasting system. At least there's one good thing about it -- you don't have to worry about Moluccan blue-ringed octopus.

mt

Shortwave Wildcards

by Curtis Bengson

Whether you choose to count them based on frequency or studio locations or programming source or transmitter sites or by their individual transmitters, there are, at any given time, anywhere from 1,000 to several thousand shortwave broadcasters operating around the globe. And each one, in some small way, is unique. Something about each of these stations makes it one of a kind, just like snowflakes -- or human beings, for that matter.

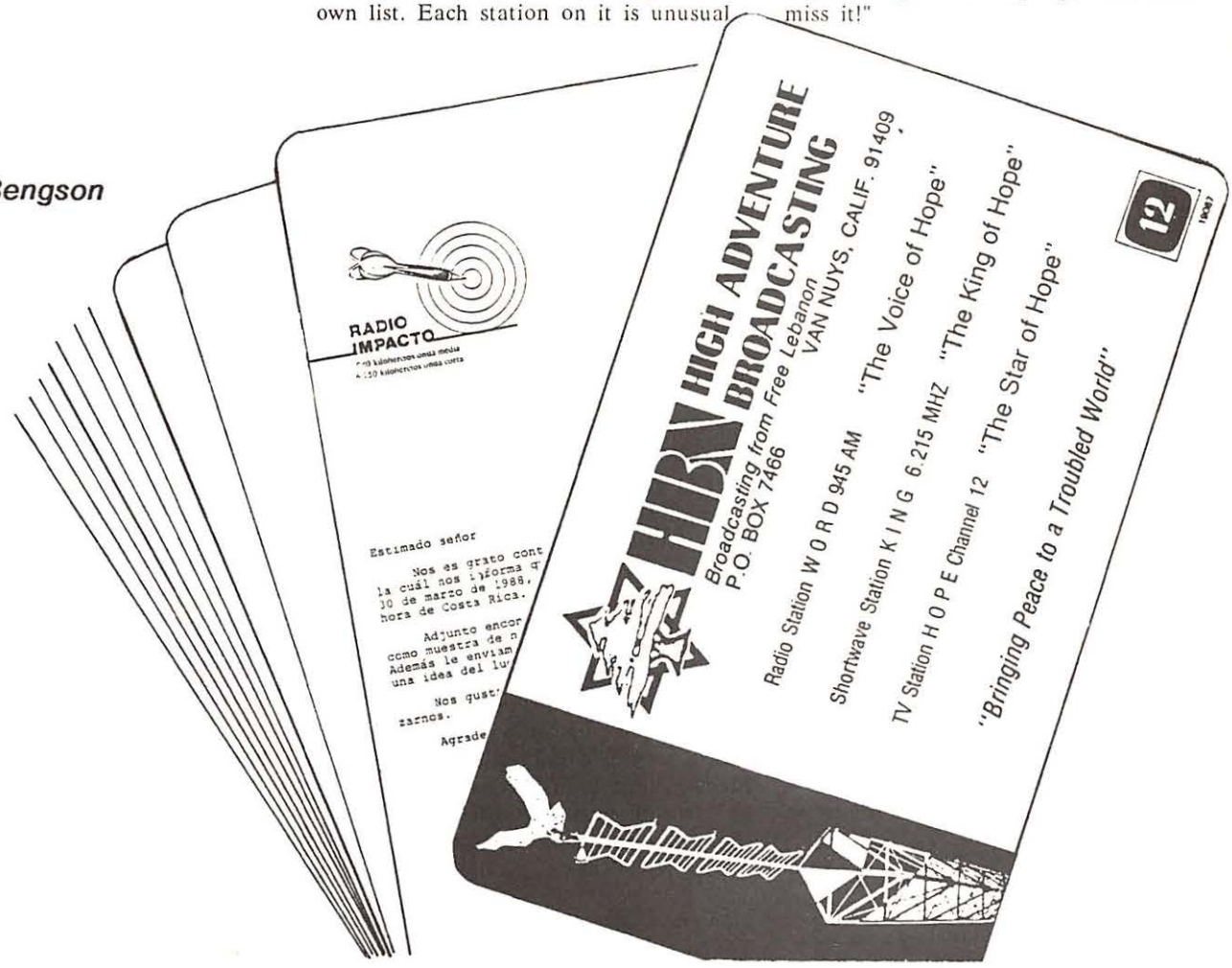
And yet there are an indeterminate number of these shortwave stations which are, for various reasons, "more" unique than others -- stations which are unusual in some special way.

Ask any dozen shortwave listeners to put together a list of ten such stations and chances are pretty good you'd end up with a dozen lists which have little in common. Not to be deterred and just for the fun of it, we've put together our own list. Each station on it is unusual in some way and none have quite the same claim to fame. Here's our *Monitoring Times* list of shortwave wildcards:

Spies in the Towers

People who make a nightly check for spies hiding under the bed raise their eyebrows every time they tune in Costa Rica's Radio Impacto. This well-heard, licensed, commercial broadcaster doesn't seem to air any commercials, yet it can afford to operate an AM station and two shortwave transmitters. It pumps out a lot of anti-Nicaragua, anti-Cuba programming. It's said the station, in suburban San Jose, has more than its share of security present and conspiracy fans have real questions about who really runs this station.

Haven't heard it? Check 6150 or 5030 any evening. Like they say, "You can't miss it!"



Bomber's Target

Before George Otis and his High Adventure Ministries put KVOH on the air in California they had several years of highly interesting shortwave broadcast experience with the Voice of Hope, operating from Lebanon, actually within sight of the border of Israel. The station survived numerous threats against it and the devout could easily see the hand of God protecting the station. A couple of years ago that hand slipped and a bomber got the studios, destroying the facility, killing and wounding personnel.

The Voice of Hope in Southern Lebanon has been threatened and bombed but it continues.

Nonetheless, the station clings tenaciously to its mission of peace and can sometimes be tuned in around 0300 or later on 6280. Signals are usually poor, however, though the programs are usually in English.

Broadcaster or Utility?

Radio Kiribati, the government-run station in the islands of the same name, probably doesn't see itself as unusual, but it is in the eyes (or ears) of DXers. Shortwave broadcast DXers claim the station is a broadcaster while utility specialists insist it qualifies as a "ute."

That's because the shortwave transmissions are in upper sideband and generally considered to be a "feeder" outlet intended to be picked up and relayed on one of the outer islands, which makes it a utility. There's also evidence that the feed is simply picked up on a radio and fed over loudspeakers which, to the SWBC DXer, makes it a broadcaster as well.

There tend to be long stretches when Radio Kiribati is not heard very well in the U. S. but at this writing the 10 kw station is being heard pretty regularly from its sign-on just before 0600 on 14802, in English and Kiribati. It's using USB, don't forget.

One in a Hundred Tries

There are always a few stations that are highly positioned on the easy-to-hear scale. When it comes to QSLing them, however, the indicator flicks about the same distance in the opposite direction. Of these, the one with probably the longest easy/difficult history is Radiodiffusion Television Ivoirienne, the government station in the Ivory Coast (Cote D'Ivoire).

According to old records, that was the case even 20 or 30 years ago when Radio Abidjan could be quite easily heard on 4940 with 0600 sign on. And it's still the case today, even with a newish 500 kilowatt transmitter and easy reception from 0555 sign on on 6015 and 1900 to 0000 on 11920 in French and local languages.

Oh, the station does reply now and then -- at a guess to one out of every 50 or 100 reports -- but no one has quite learned the key to how to write one of the lucky letters. Putting a nice spin on the whole affair is the fact that the station has had the same QSL card all this time, complete with "SWL" in large letters on the face of the card! But just try and get an answer on the first attempt. Some DXers haven't succeeded even after 20 tries!

Split Personality Station

Further north in Africa there is a station which, if the people involved thought about it, could easily end up with a severe identity crisis. Radio Mediterranee International might already have a split personality in that it is partly a government operation and partly a commercial one.

Nominally located in Morocco, it has FM stations in such spicy-sounding places as Rabat, Casablanca and Marrakech. But its main office is in Tangier, which was once an international city and is still considered as a separate radio country by many SWLs. Its shortwave transmitter is at a place called Nador which is located in what used to be Spanish Morocco. It's still counted as such for country counting by some.

To further internationalize things there is also an office in Paris. Radio Medi-Un is a fairly easy catch on 9575 running in French and Arabic to around 2045 UTC closing.

Murder, Inc.

Equatorial Guinea was, for several years, a place which, if you could go there (though no sane person would want to), you might well never come back. Murder was virtually at government ministry level and over several years the population's standard of living was reduced about as far as it is possible to go.

Go to Equatorial Guinea and you might never come back. Up until a few years ago, murder was practically a hobby in this African nation – until Radio Africa came on the air.

Perhaps it's a measure of how bad things were that the new government turned to commercializing its shortwave station in the hopes of making a little money! What was the Malabo national station became "Radio Africa" with slots of commercial religious time offered for sale.

The station is represented by Pierce International Communications, 10201 Torre Avenue, Suite 320, Cupertino CA 95014. You can tune in on broadcasts by groups as varied as the Assemblies of Yaweh (which runs its own shortwave station, WMLK) to the Lutheran Reformation Hour. Radio Africa is on 9553 (slightly variable) and best heard around 1700 and later.

A Deepening Mystery

Beyond the government's Burma Broadcasting Service in Rangoon, there is a rather cloudy military broadcasting situa-

tion which shortwave listeners are still trying to piece together. A couple of years ago word surfaced about a Burmese Defense Force station on 5060, operating at Taunggyi in Shan State. Then a power increase and apparent frequency shift enabled U.S. listeners to hear the station on 6570.

Or did it? Later word indicated that the 6570 station is at Maymyo, some miles north of the town of Mandalay. 5060 is reported to still be in use, although no one seems to know whether there is still a transmitter at Taunggyi or not. In either event, no address is known for either one and no one has yet been able to get a report through, much less an answer with, perhaps, some clarifying information.

Breaking Thai Law

In Thailand only Radio Thailand, the official government station is allowed to operate on shortwave (Thai TV and Thai Meteorological stations went off shortwave a number of years ago). Now it seems the Royal Palace is breaking the law. There has long been a medium wave radio station broadcasting from the palace grounds and "Or Sor" has been reported on shortwave a few times in the past year or so. Aussie DXers have monitored this between 0900 and 1200 on 6148 but it hasn't been heard by anyone in North America that we know of.

Well, if anyone can break a law or two and get away with it, perhaps those in the palace are the ones.

The Newest

One of the shortwave wildcards isn't even on the air yet! Not as this is written, anyway. When it does come on the air, WWCR in Tennessee will be the newest in a six year parade of broadcasts coming on the air from the U.S. or its possessions. But it won't qualify as a wildcard for very long -- only 'til the next U.S.-based shortwave station comes along and takes over claim to being the newest. After that, WWCR will be just another shortwave station. Check out 7520 and 15690 kHz.

Chinese River Radio

Back to Asia for the last one on the list. The development and increase in broadcasting activity in the People's Republic of China is one reflection of the drastic changes there since Mao left the scene. One of the newer Chinese broadcasters is still another voice aimed at estranged Taiwan. The Voice of Pujiang, based in Shanghai, broadcasts to natives of Shanghai who are now in Taiwan. The station takes its name from the Huangpu River which runs through Shanghai and has been on the air since early in 1988.

Many U.S. DXers have picked this one up around local sunrise running on three parallel frequencies: 3280, 3990 and 4950 with programs in Mandarin and the local Shanghai dialect.

So there is our list of shortwave broadcasters which, for various reasons, are more unusual than most. We didn't include any pirate broadcasters or clandestines since, by their very nature, they are more unusual than the average shortwave broadcaster. To a lesser degree the same holds true for the very low power one and two person broadcasters in South America, so they were also left out of consideration.

Despite disqualifying those three types there were probably numerous other examples which would well qualify as broadcasters having a different twist about them. Stations have different histories, purposes and backers and perhaps in our rush to log the next one we need to stop and appreciate the unique flavor of each one we log.

mt

Few listeners get a QSL out of Abidjan the first time. Most have to make many attempts.

Will the residents of Smithville sit still for a stranger to raise the first private radio tower in town? The typically mundane city council meeting suddenly comes alive with opposition to . . .

An Antenna Tower for the Duke

by Wayne Mishler

A typical city council meeting it was not. The normally quiet hall roared with voices blending in simultaneous conversation. The smell of ladies' perfume, men's cologne, and tobacco smoke hung in the stale air like fragrant smog. Early fall finery loomed under the fluorescent lighting like flowers at a funeral.

To say the least, it was the largest crowd that Gertrude Simpleton had ever seen at the Smithville city council meeting. She should know. Gerty, as she was called by the few people who were on casual speaking terms with her, never missed a council meeting. Whatever topic came up, Gerty was there to pass judgment on it. Among other things, her outbursts kept the councilmen awake. She was a fixture at the meetings, and always occupied her favorite front row seat which over the years had expanded to fit her large frame.

But tonight as Gerty waddled into city hall to occupy her usual seat, it was taken. In fact, as near as Gerty could tell, all of the seats were taken except for three at the head table which were reserved for council officials who had not yet arrived.

Somewhat influenced by the size of the crowd, Gerty swayed as gracefully as possible down the center isle and stood in front of the one man she figured would give her his seat.

"Evenin' Reverend Smallbody," she said in the most feminine voice that she could manage.

"Evenin' sister Gertrude," the Reverend replied.

"What brings you out to the council meetin' tonight, Reverend?" Gerty asked.

"The obvious, I guess. The whole town is talking, you know..."

"Of course I know," Gerty interrupted. She glanced toward the dignified stranger who sat quietly and obscurely on the back row. "It is my civic duty to keep up with things that happen in this town, you know. But I surely am surprised to find all these seats taken." There was an obvious hint in her voice and an insistent grin on her round face.

"Oh my, where are my manners" Here, please take my seat," the Reverend said, reluctantly rising to his feet. Gerty squeezed into the folding seat, which creaked under her 320 pounds. "Thank you," she said.

"Certainly," replied the Reverend.

Taking his leave, the Reverend peered across the audience in search of another seat, and found two -- one on either side of the stranger on the back row.

"Is this seat taken," the Reverend asked.

"No."

The Reverend sat down. "I am the Reverend Samuel Smallbody," he said.

"You want to put up a tower? Why would you want to do a fool thing like that?"

"Duke Atterberry," replied the stranger. The two men shook hands.

"You're new in town, aren't you?" asked the Reverend.

"Relatively so," the Duke said.

"I've read about you. Welcome to Smithville. We're honored."

The Duke smiled. "Thank you," he said.

At that moment, the mayor and two councilmen entered the room, laughing about something that had happened in the hallway. They glanced at the Duke, and then walked to the head table and sat down in the vacant reserved seats.

The mayor tapped the microphone to

see if it was working. It was. "Aarrumph." He cleared his throat to speak.

"Pleased to see you all taking such an interest in your town's affairs tonight," he said, looking over the huge crowd. "And the usual good evening to you, Gertrude."

The audience laughed.

"Looks like we have only one item to discuss tonight: an application by a Mr. Duke Atterberry to erect a 50 foot radio tower in the back yard of his residence," the mayor announced. "Now, Mr. Atterberry, why on earth do you want to do a fool thing like that?" asked the mayor.

Murmurs from the audience rose in crescendo as the Duke slowly stood to his feet and walked with poise to the front of the room. He was a tall, slender, graying man in his fifties, with closely-trimmed beard and receding hairline. His attire and manner were those of a man of means, authority, and confidence. He faced the council members, then turned and faced the audience which by now was so loud that he could not speak over the din.

The mayor rapped a gavel on the table. "Mr. Atterberry has the floor," he said.

The Duke spoke with a faint but unmistakable English accent. "Thank you, Mr. Mayor... ladies and gentlemen. I'll get right to the point. My reason for wanting...rather, for needing the tower is that I am a serious amateur radio operator and shortwave listener and the tower will enable me to establish radio communications with other radio stations around the world.

"Yeah, like with the Soviets," yelled an old man in bib overalls. "I heard about how he listens to them Moscow stations and Russian satellites," the old man told the audience. "Sounds downright unamerican to me."

"Yes, I do monitor Radio Moscow along with other stations in all parts of the world. This gives me a broader awareness of..." The Duke was not allowed to finish his thought.

"And what about them satellites?" the old man interrupted.

"Well, I don't actually listen to Russian satellites. They transmit mostly in code..."

"Ha! I knew it. Code. Before we know it this here town will be the espionage capital of the U.S.A. Nosiree Mayor. I'm flat against this stranger and his radio and his tower," the old man yelled.

The audience roared in simultaneous comment. The mayor rapped his gavel.

An elderly lady stood and raised the question of safety. "I live next door to Mr. Atterberry and quite frankly I am afraid that his tower will fall on my house or worse yet, on me," she said in a quiet voice.

Safety is one of my worries, too," the mayor said.

The Duke pulled back the jacket of his three-piece suit and placed his hands in his pockets. He spoke with a calm, even tone. "The tower is engineered to withstand violent windstorms. Installation will of course be done to the satisfaction of city engineers. It will be set in concrete, bolted to my house, and supported by cables so that it cannot possibly fall. The antennas on the tower will not overhang anyone else's property," the Duke explained.

"But what about the children who come into your yard and touch it," objected another lady. "Won't they be electrocuted or something?"

"The tower will be grounded. It will carry no electricity," the Duke explained.

Another man stood up and spoke. "I lived next door to a guy with a radio transmitter once," he said, "And all I ever had was trouble as soon as he put up his antenna. I swear, the TV went bananas and the wife's food mixer stopped workin' and my kid's electric train ran slower."

As laughter quieted to a low roar, the Duke opened his mouth to respond, but Gerty, with great exertion, stood up and took the floor in her usual manner. "You people are about as farsighted as a mole in a coal-bin at midnight," she said.

"I know everybody in Smithville and I know that nobody has a radio tower in their yard. And we should be more afraid of that fact than anything else. We need radio operators like Mr. Atterberry here. Why, him and that radio tower could save this town."

"Maybe you'd like to explain that," the mayor said.

An eloquent voice from the back row came to Gerty's rescue. "There is something that needs to be said," the Reverend Smallbody interjected.

With the characteristic flair of an orator, the Reverend told about a newspaper article that he had read recently. It was a story about a distant town about the size of Smithville that had been ravaged by a pre-dawn tornado. The storm struck at 3 a.m. with surprise and with deadly force, laying down oak trees and power lines and ripping homes apart like they were made of paper.

The scene at dawn was one of confusion and desperation. Dozens of homes were demolished. Communications lines were down. Some residents wandered in shock; others wept in hysteria. And, trapped under the weight of a collapsed roof, two-year-old Angie Christensen lay bleeding.

Rescue workers freed Angie within minutes. But her troubles were far from over. Angie needed immediate medical care. The town's only medical facility had been destroyed by the storm. It was a two-hour ambulance ride to an emergency center that could help Angie. The town doctor feared she would not live that long.

There was an emergency helicopter at the medical center, but no way to get a message to its dispatcher.

Meanwhile, an amateur radio operator whose equipment was damaged but workable was setting up an emergency station, powered by a portable generator. As he worked, a neighbor drove to police headquarters with news that emergency communications would be available by amateur radio in minutes.

The town doctor accompanied the neighbor back to where the station was going up. As they arrived, the radio operator was going on the air. HF propagation was not good, but there were some early risers rag-chewing on 75 meters. The radio operator broke in with a request for emergency assistance.

The nearest of the two hams was transmitting from a town about 700 miles away from the medical center to which little Angie needed to be flown. He cleared the frequency for traffic, placed a long-distance telephone call to the medical center, and patched the call through his transceiver so the center's admitting physician was able to speak directly to the doctor at the disaster scene. Within minutes, a medically-equipped helicopter was en route.

The amateur radio operator's transmissions were the first news of the tragedy to reach the outside world. A nearby shortwave listener heard the transmissions and notified the Red Cross and a local television news station.

Soon the Red Cross had set up emergency shelters and additional communication links. The TV station aired a news bulletin on the town's plight, and solicited volunteers and donations.

The amateur radio operator stayed on the air, handling emergency radio traffic between concerned relatives and town residents. For several hours, his was the only source of two-way communications in town. And then his earphones crackled with the greatest news of all: little Angie was doing well and was out of danger at the medical center.

"That radio operator's home was destroyed by the storm," the Reverend said. "He recently moved to Smithville. And I think he deserves more consideration than he has received here tonight."

When the Reverend had finished speaking, the citizens of Smithville were silent. Some were crying.

Finally, the mayor spoke. "Are we ready for a vote?"

The council members nodded.

Afterward, as the crowd left city hall, several residents gathered around the Duke. Some were amazed that an ordinary citizen could monitor foreign radio broadcasts. They could not believe that shortwave radios would pick up U.S. and foreign military communications. They were enthralled at the Duke's explanation of how he predicted Russian intelligence and military activity by monitoring and plotting the track and altitude of that nation's military satellites.

Gerty told of her infatuation with scanners. "I've got three of 'em," she said, "and they're always on. They lull me to sleep at night. Kinda keeps me up with the local goings-on, if you know what I mean."

The group laughed.

"I am interested in monitoring religious foreign broadcasts," the Reverend said.

"You are all invited to my house," the Duke said. "I'll show you my station, and let you sample what it feels like to have the entire world at your fingertips. It's my way of saying thanks for helping me to get the tower approved tonight," he added.

The three of them left city hall together, walking toward a coffee shop, and talking about the fascination of radio.

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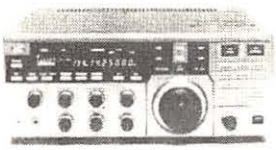
Shortwave Receivers



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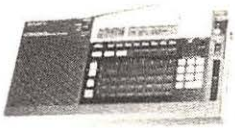

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Shortwave Broadcasting

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IRCs: International Reply Coupons (IRCs) seem like the perfect solution to the problem of pre-paying return postage from another country. You buy them at your post office, and recipients exchange them for local stamps at their post office.

Despite the fact that almost every country in the world is a member of the Universal Postal Union, IRCs, in practice, are not honored in many countries. This is especially true in remote areas -- out of ignorance, inefficiency, or to prevent any hint of foreign exchange between individuals.

For example, IRCs can neither be bought nor exchanged in Guatemala. Some German DXers visiting Radio Tezulutla did the director a favor by converting 100 of them into dollars (Danish SW Clubs International). IRCS are supposed to be stocked at all post offices in Thailand, as well, but they provoked only curious stares at a branch office near Chiang Mai (David Vicars, WDXC *Contact*).

Arthur Cushen, writing in the American Shortwave Listener's Club bulletin, reports that IRCs were decreed invalid by the military government of Peru in 1985. Yet Henrik Klemetz of Sweden reported on Radio Netherlands' *Media Network* that he bought and exchanged IRCs in Lima as recently as August of 1987. Klemetz does say, however, that it is very difficult to exchange them outside capital cities. Radio Tropical attached one to the envelope rather than stamps!

Even if accepted, IRCs are anything but a bargain. In the U.S., they now sell for US$.95 cents. By definition, one of them will be exchanged for stamps to mail the lightest (measured in grams -- usually less than half an ounce) letter back to the issuing country by surface mail. As a result, you might have to supply as many as six to pay for an airmail reply.

Savvy QSL collectors skip the IRCs and instead purchase appropriate foreign stamps in the proper amounts from a dealer (or trade with pen pals). Some major broadcasters send their monitors IRCs. Those who receive them find it more economical to treat them like currency, never cashing them in but using them to pay for foreign DX publications with prices quoted in IRCs.

Still, for those who appreciate the tradition and convenience of IRCs, we have some tips. They cost only US$.85 cents or so if you buy them from Canada at CAN$1.05 (Canada Post Corp., Antigonish, NS B2G 2R8. Major credit cards accepted. Allow six weeks for delivery.) Note, however, that one order of IRCs from Canada Post arrived without the necessary postmarks on their left half.

If you're willing to wait for up to eight weeks for delivery, IRCs are also available from the Philatelic Centre, Hong Kong Post Office, 2 Connaught Pl., Hong Kong. Major credit cards are accepted but you must add HK$3 for shipping (Gerry Bishop, Niceville FL, *World of Radio*). If you holiday in Greece, pick up some for just 70 drachmas (Riccardo Rosati, WDXC *Contact*).

Austria: A poll conducted for the BBC also rated 13 other stations among U.S. listeners. Astoundingly, Austria came in fourth after RCI, BBC and Moscow, and tied with Havana. That's far ahead of Radio Netherlands and Voice of Germany, both of which have more hours in English, more frequencies and even relay transmitters than Austria. This must speak volumes for the quality of Radio Austria International programming. Listen for yourself at 1130 UTC on 15450 kHz, 0030 on 9875 and 0430 on 6015. Times may shift an hour later from September 25 (Frequencies via Robert E. Thomas, Bridgeport, CT).

Now Austria is negotiating with Canada for a relay exchange.

Brazil: Radio Cultura do Para, 5044.8 kHz, features a confused DJ Saturday and Sunday mornings until 0700. *Your Late Night Pal* is confused about what to do and what day it is, giving away macaroni and playing music like "I'm a Letter Carrier in Love" (all in Portuguese). (Carlos Coimbra, Toronto, *DX Listening Digest*).

Burkina Faso: If you hear Japanese lessons on a Friday at 2130 UTC on 4815, don't get excited; it's only Ougadougou, reactivated (Bob Padula, RCI *SWL Digest*).

Costa Rica: Radio Golfito says it is not only on 1600 kHz but also 6150 -- both with 1 kw of power (*World Radio TV Handbook* via *DSWCI*). Unheard, must be planned for the future.

Radio for Peace International's revised schedule: Monday-Friday 1800-2400 on 21555, Tuesday-Saturday 0100-1000 on 13660, repeating 3-hour program blocks, including our *World of Radio*, Monday at 1800, Tuesday 2300, Wednesday 0300, 0600, 0900, 2000, Friday 2100, Saturday 0100, 0400 and 0700, all approximate. Stay tuned Friday, Saturday and Monday for RFPI's own mailbag.

Cuba [non]: While the U.S. government endorses Catholicism by broadcasting masses to Cuba on Radio Marti, the Jehovah's Witnesses are far more oppressed in Cuba. Now, clandestine La Voz de CID broadcasts *La Atalaya* ("Watchtower") daily around 1050 and 2210 UTC on 9940 kHz. (One hour later from October 10 after DST.)

Germany, West: Voice of Germany planned to restructure its English programming as of September 25. Now there's less difference between English services broadcast to different target areas (via Kraig Krist, *DXLD*).

Guam: Micronesia's plans for domestic shortwave are on indefinite hold, so the next best thing is a new program on KSDA called *Micronesia Snapshots*, Saturdays at 2100-2115 on 15125 kHz. It's not clear whether they mean UTC Saturday, or local Saturday which would be UTC Friday (Gerry Bishop, *Review of International Broadcasting*).

Hong Kong: Radio TV Hong Kong has been testing on shortwave 9685 kHz aroujnd 0700-1600 UTC in English and Chinese. There's also announcements in Vietnamese discouraging approaching boat-people. It's the old 2-kw transmitter occasionally active on 3940 kHz. Best in Australia 0800-1300 when there's BBC news in English, first heard by Craig Seager (Bob Padula, OAM, *Australian DX News*). Unfortunately, the frequency is already jammed and there's heavy adjacent channel interference.

Indonesia: The two old East German-made transmitters of Voice of Indonesia are in such poor shape that they can only put out 30 to 50 kw instead of 100 on 11790 and 15150, both variable (Alfred Heinis, via Lim Kong Jin, Malaysia). But a new 250-kilowatt unit has been put into service in western Sumatra, to reach Europe better, including English retimed from 1500-1600 to 2000-2100 on 7125 kHz (David Foster, *OzDX*). The change, however, is no help in North America.

Italy: Italian Radio Relay Service is a serious project hoping to attract program-time buyers who can't afford the 250 kw Radio Trans-Europe in Portugal. Though power is a modest 5 kw, with careful ingineering they hope to cover most of Western Europe with a decent signal, SSB plus carrier, and sophisticated filtering

Shortwave Broadcasting

to vary audio bandwidth. Target date is the first weekend in October, local day and evening on the 7, 9, and 13 MHz bands. IRRS will be DXer-friendly with QSLs (Andy Sennitt, *RNMN*).

Japan: Contrary to previous reports, there is no sign of any shortwave activity from Far East Network (Chuck Boehnke and Richard E. Wood, Hawaii). From October 29, Radio Japan via Canada will make another two-hour shift instead of the one hour you would expect when DST ends -- at 0300-0400 on 5960 kHz (Bruce MacGibbon, *DX Spread*).

Netherlands: Program previews from Radio Netherlands: Wednesdays from October 5; an eight-part documentary co-produced with ABC about Dutch influence on the development of Australia. *Research File*, Monday, October 31 is about the science behind weather forecasting (Dick Rush ands Carl Mann, *RIB*).

Netherlands Antilles: Trans World Radio hopes to start a new DX program from late fall. The 15-minute program, to be broadcast in the evenings, will be called *Bonaire Wavelength* and will be hosted by Chuck Roswell (Sheldon Harvey, PQ, *DXLD*).

New Zealand: Radio New Zealand is again in danger of going off shortwave (Arthur Cushen, via Chris Hambly, Alice Springs, *DXS*). Meanwhile, the schedule until October 29 is: 1830-2115 on 12045 and 15115 kHz; 2345-0145 (0145-0330 Saturday/Sunday), 0330-0730 on 17705 and 15150 kHz; 1000-1205 on 6100 on 9850 kHz.

Papua New Guinea: Several provincial stations are changing frequency so that all of the new 10-kilowatt transmitters are spaced at least 15 kHz apart. Since there is not enough room for all of them on 90 meters, some are moving to 120. The new lineup is: 2410 Wabag, 2435 Kimbe, 2450 Mt. Hagen, 2465 Lorengau, 2490 Kundiawa, 3205 Vanimo, 3220 Lae, 3245 Kerema, 3260 Madag, 3275 Mendi, 3290 Port Moresby, 3305, Daru, 3320, Kieta, 3335 Wewak, 3345 Popondetta, 3365 Alotau, 3380 Rabaul, 3395 Goroka, 3905 Kavieng.

Each week, a different station tests its new transmitter as an engineer makes the rounds: September 22-27 Lae, September 29-October 3 Kundiawa, October 6-11 Mt. Hagen, October 13-19 Wabag, October 21-27 Madang, October 29-November 7 Wewak. Meanwhile, regular transmissions have been reduced so as to close at 1300 instead of 1400 UTC (Godron Darlin, *OzDX* and *ADXN*).

Peru: Mario Vargas Llosa, known to DXers for his radio-ambience novel, "Aunt Julia and the Scriptwriter," is a likely candidate for president in 1990 (Don Moore, *Fine Tuning*).

Radio Nor-Oriental, 5272 kHz, was destroyed by fire in June. The owner has been contacting DXers who wrote for QSLs, asking them for a $50.00 contribution to rebuild (Julian Anderson, Argentina, *Radio Nuevo Mundo*).

Radio 1550, la Nueva Voz del Centro (NVC) tells the *World Radio TV Handbook* that it is adding shortwave on 4800, 1 kw, in Pio Pata at 1000-0600 UTC. Unheard so it must be a future plan (Finn Krone, *DSWCI*).

Seychelles: BBC's new Indian Ocean relay was scheduled to go into full operations on September 25th. Here's the schedule: 0300-0400 on 9600, 0300-0500 on 11750, 0400-0630 on 15420, 0500-0630 and 0900-1400 on 17885, 0900-1600 on 15420, 1645-2300 on 6005 and 7185 kHz (Andy Sennitt, *RNMN*). Beware: these same frequencies are used by other BBC sites.

Sierra Leone: SLBS heard on 5980 from 0630 UTC in vernacular, 0652 in English, 0700 news in English until off at 0710 or 0715, best when BBC is missing from 5975 kHz (Al Quaglieri, Albany, NY *SPEEDX*).

Sweden: Radio Sweden's new schedule from September 25 shows 15345 and 17860 at 1400, 9695, 11705 and 11950 at 0230 -- no English at 2300 anymore but at 2230 instead for Africa and Latin America on 11925 kHz (Bruce MacGibbon, *DXS*).

Switzerland: Monthly broadcasts from the Red Cross are scheduled on UTC Tuesdays and Fridays September 27 and 30, November 1 and 4, at 0310-0327 on 6135, 9725, 9885, 12035 kHz (via Bill Dvorak, Wisconsin).

Tahiti: Radio Tahiti is using 9752 regularly, very good carrier level but very low modulation, 35 to 40 percent, around 0900 UTC. Other frequencies are poor with much interference; mediumwave (AM) 738 kHz often good! (Chuck Boehnke, Keaau, Hawaii)

Turkey: Voice of Turkey should now be one hour later, at 2300 and 0400 UTC on 9445. Features after the news for the fourth quarter are: Monday, *Amenian File*. Tuesday, *Ataturk, Turkish Album*. Wednesay, *Letter-box*. Thursday, *VOT Marking its 50th Anniversary, What do you know about Turkey*. Friday, *Architect Sinan, Frame*. Saturday, *Outlook, DX, From Turkey with Love*. Sunday, *Dwellers of Anatolia Through the Ages, Turkish Panorama* (Kraig Krist, *DXLD*).

Correction to September: 0640, not 9460; the English news is only on FM, not shortwave.

UKOGBANI: In addition to regular sports programs, BBC has special Olympic reports at 0430, 0940, 1330 and 1945 UTC. Not only that, but at 0300 UTC, there's the daily *Sounds Olympic* on special frequencies 6175, 9510 and 12095 only. *Sounds Olympic* provides commentaries on the best action plus light music *(RIB)*.

Big programming changes are in store from October 28: probably an expansion to news hours and the start of a split into two separate World Services.

USA: Voice of America is considering closing down the Bethany, Ohio, site when AFRTS goes off the air on September 25th. Radio Marti, Voz de la OEA and a few VOA services could be transferred to Greenville. (Robert Jones, *OzDX*).

WWCR, Nashville, now plans to begin testing at the end of December and go on the air January 2. Surely the "final delay," they say (Bruce MacGibbon, *DXLD*).

From early August, WWV replaced its propagation information at :18 past the hour with an apology pleading equipment problems; you can phone them instead (at any time except weekends?) at (303) 497-3235. Sometimes the apology was missing, too.

Fortunately, you can hear WWV's propagation predictions via some of our broadcasts on Radio Canada International's *SWL Digest* and *World of Radio* on WRNO, now scheduled Thursday at 2300 on 13760 kHz, UTC Friday at 0030 on 7355, Saturday 0300 on 6185, Saturday 2330 on 13760, Sunday 2030 on 15420. Catch the earliest broadcast in case later ones are pre-empted for football. When DST ends the last Sunday in October, times will shift one hour later, and barring any further changes, frequencies would be 7355, 7355, 6185, 7355 and 13760 respectively.

USSR: If music from Moscow makes you want to buy Soviet records, here are some sources: Ukrainska Knyha, 962 Bloor St. West, Toronto, Ontario (416) 534-7551 (also sells Soviet shortwave radios); Troyka, 799 College St., Toronto (416) 535-6692; and Cartan, Inc., 377 Geary St., San Francisco, CA (Peter and Lidia Krochmaluk, North York, Ont., Canada)

Read much more from Glenn Hauser in Review of International Broadcasting and/or DXListening Digest; samples $2 each, 10-issue subscriptions $21, or both for $40 (Rates to USA, Canada, Mexico; US funds on a US bank or postal money order), to the address in the masthead.

Broadcast Loggings

Let other readers know what you're enjoying.
Send your loggings to ***Gayle Van Horn***
160 Lester Drive, Orange Park, FL 32073

English broadcast unless otherwise indicated.

0005 UTC on 11790
United States: AFRTS. Red Sox/Yankees baseball game. Station heard under Russian transmission from Kiev on this frequency. Also heard on parallel frequency of 6030 kHz. (Bob Fraser, Cohasset, MA) Get that QSL card now... --ed.

0015 UTC on 11800
Italy: R.A.I. International news and national story on exporting Italian wines to Canada. (Bob Fraser, Cohasset, MA)

0018 UTC on 6090
Luxembourgh: Radio Luxembourgh. Local record store commercial and rock music from David Bowie and Rolling Stones. Listener phone-in for music request of British pop hits. Music from Madonna and automotive products commercial. (Greg Humphries, Long Beach, CA) great details! Let's have more reports like this! --ed.

0027 UTC on 11910
Hungary: Radio Budapest. Trumpet interval signal and English sign-on. ID, frequency schedule, and national news on the Hungarian Socialist Party. (Tom Sullivan, New Orleans, LA)

0100 UTC on 15425
Sri Lanka: Sri Lanka Broadcasting Corp. (SLBC). Pop music program and several station IDs. Heavy interference from Radio Moscow. (Doug Waller, Bay Village, OH)

0115 UTC on 9875
Austria: Radio Austria International. Classical music, station ID, and music from the 30s. (Leslie Edwards, Doylestown, PA)

0145 UTC on 4805
Brazil: Radio Diffusora do Amazonas. Portuguese. Friendly chat between announcers, follwed by Portuguese pop vocals. Station IDs and frequency schedule. Faded by 0203 UTC. (Frank Mierzwinski, Mt. Penn, PA)

0150 UTC on 4649
Bolivia: Radio Santa Ana. Spanish. Traditional Andean music of Bolivia, and brief station ID. Signal very poor to 0205 tune out. (Larry Van Horn, Orange Park, FL)

0150 UTC on 4895
Colombia: La Voz del Rio Arauca. Spanish. Time check at tune-in with commercials for Caracas merchants. Great Columbian salsa music and 0201 UTC ID. (Joseph A. Johnson, Savannah, GA)

0157 UTC on 17770
Oman: Radio Oman. Arabic. Flute interval signal and sign-on ID. Koran recitations, and Arabic music. (Bill Traister, Covington, TN)

0158 UTC on 9475
Egypt: Radio Cairo. Time tones and ID for English service. Egyptian music, station frequency schedule, and discussion on the Koran. (Bill Traister, Covington, TN)

0205 UTC on 4805
Brazil: Radio Itatiaia. Portuguese. Station fade-in following sign-off of Radio Diffusion do Amazonas at 0203 UTC. Chat from announcers and clear station ID as "Radio Itatiaia" at 0211 UTC. (Frank Mierzwinski, Mt. Penn, PA)

0207 UTC on 11710
Argentina: RAE. National news of Argentina on economics, unemployment, and politics. Parallel frequency 9690 kHz considerably weaker and mixing with Radio Moscow. (Tom Sullivan, New Orleans, LA)

0215 UTC on 11785
Germany-GDR: Radio Berlin International. National news on agricultural developments, federal assistance to Vietnam for hospital construction, and children's choral music. (Tom Sullivan, New Orleans, LA)

0217 UTC on 9885
Switzerland: Swiss Radio International. Interesting feature on the first Swiss railway system. (George Neff, Tampa, FL)

0230 UTC on 4910
Honduras: La Voz de la Mosquitia. Spanish and English. Religious programming and campesino music to 0248 UTC. Lady with news, ID, and gospel hymns. (Harold Frodge, Midland, MI)

0235 UTC on 4845
Brazil: Radio Nacional-Manaus. Portuguese. Male announcer with clear "Nacional" IDs and newscast at 0312 UTC. Fair audio level tonight. (Frank Mierzwinski, Mt. Penn, PA)

0256 UTC on 17760
Turkey: Voice of Turkey. Interval signal and piano music. Station ID, frequency schedule, and international news. (Stan Mayo, Westbrook, ME)

0257 UTC on 7200
Somalia: Radio Mogadishu. Somali. Signing on with interval signal and Somalia national anthem. Good signal but buried by VOA at 0300 UTC. (Doug Waller, Bay Village, OH)

0310 UTC on 4976
Uganda: Radio Uganda. Gospel choral music for Ugandan Sunday morning. National and local Kampala news with ID. (Joseph A. Johnson, Savannah, GA)

0340 UTC on 11810
Seychelles: Far East Broadcasting Assoc. (FEBA). Swahili. Religious music and inspirational message. "FEBA" ID at 0340 UTC and African choral music.-ed.

0350 UTC on 4845
Guatemala: Radio K'ekchi. Spanish. Terrific marimba music at tune-in followed by station ID and religious music. (Joseph A. Johnson, Savannah, GA)

0400 UTC on 4820
Honduras: La Voz Evangelica. Spanish. Religious music and station ID as "La Voz Evangelica, Honduras." Station interference from African station, Radio Botswana. (Frank Mierzwinski, Mt. Penn, PA)

0409 UTC on 17685
Israel: Kol Israel. Discussion on health and international sports scores. Israeli weather report and 0413 ID. (Stan Mayo, Westbrook, ME)

0438 UTC on 3300
Guatemala: Radio Cultural. North American easy-listening music and station ID at 0445 UTC. Heavy morse code interference. (Frank Mierzwinski, Mt. Penn, PA)

0500 UTC on 15150
New Zealand: Radio New Zealand. Pop music program, time tips and station ID. (Stan Mayo, Westbrook, ME)

0500 UTC on 5288
Chad: Radio Mondou. French. Station sign-on routine with very weak signal. News type reports until 0508 UTC, followed by native African music. (Doug Waller, Bay Village, OH)

0555 UTC on 14802 USB
Kiribati: Radio Kiribati. Station sign-on with news from London at 0600 UTC and local news at 0610 UTC. Musical program at 0620 UTC. (Doug S. Waller, Bay Village, OH)

0600 UTC on 6165
Netherlands Antilles: Radio Netherlands relay. Media Network program on solar flares and the results of shortwave fade outs. (James Kline, Santa Monica, CA)

0635 UTC on 4845
Mauritania: ORTV de Mauritanie. Arabic. Koran recitations and traditional Islamic music. Station ID and newscast at 0700 UTC. (Rod Pearson, St. Augustine, FL)

0701 UTC on 9545
Solomon Islands: Solomon Islands Broadcasting Corp. (SIBC). Native island music, local area commercials and station ID. (James Kline, Santa Monica, CA)

0858 UTC on 4965
Brazil: Radio Alvorada. Portuguese. Lively Brazilian sambas. Station ID at 0900 UTC, local time checks, and morning program announcements.

Shortwave Broadcasting

0920 UTC on 4821
Peru: Radio Atahualpa. Spanish. Station break for "canned" ID and time check, followed by beautiful Peruvian music.

1008 UTC on 9735
Paraguay: Radio Nacional de Paraguay. Spanish. Latin music program and clear ID. Considerable interference from BBC on 9740. (James Kline, Santa Monica, CA)

1040 UTC on 12200
China: CPBS-2. Chinese. American Music Hour featuring oldies such as Mr. Sandman and Moon River. Brief Chinese announcements between music selections. (James Kline, Santa Monica, CA)

1115 UTC on 15455
China: Radio Beijing. Station ID and interview with Dr. Henry Kissinger regarding major economics and the future of China. (Stan Mayo, Westbrook, ME)

1150 UTC on 15505
Kuwait: Radio Kuwait. Arabic. Special programming beamed to Europe. Arabic music selections with singing and 1200 UTC ID. (Frank Mierzwinski, Mt. Penn, PA)

1211 UTC on 17575
Madagascar: Radio Netherlands relay. Station ID and program images on parks and gardens of Scotland. (Stan Mayo, Westbrook, ME)

1230 UTC on 6120
Canada: Radio Japan relay. Japan Travelog with report on the national parks of Japan. (Bob Fraser, Cohasset, MA)

1230 UTC on 9580
Australia: Radio Australia. Communicator program and news on Rupert Murdoch's "Sky-Channel" satellite TV system. (Bob Fraser, Cohasset, MA)

1312 UTC on 15310
Norway: Radio Norway International. Brief report on sighting of a Loch Ness type monster in a Norwegian lake. (Bob Fraser, Cohasset, MA)

1344 UTC on 15575
South Korea: Radio Korea. Letters from international listeners and station ID. (Loy W. Lee, Richmond, KY)

1558 UTC on 11635
Clandestine: La Voz del CID. Spanish. Political speeches and ID as "esta es Radio Camilo Cienfuegos, Cadena Radio, La Voz del CID." Easy-listening music past 1600 UTC. (Harold Frodge, Midland, MI)

1700 UTC on 15500
USSR: Radio Moscow. African service with news and African Mail Bag and Weekend in Moscow" programs. Usual anti-American and South African slant to commentaries. (Jack Kellner, Honolulu, HI)

1730 UTC on 11930
United States: Radio Marti. Spanish. National news and Latin music. Soap operas for Cuban listeners. (Edouard S. Provencher, Biddeford, ME)

1822 UTC on 21485
Liberia: Voice of America. Commentary on the U.S./USSR relations. "VOA" ID at 1830 UTC and newscast at 1831 UTC. (Frank Mierzwinski, Mt. Penn, PA)

2000 UTC on 11820
Qatar: Qatar Broadcasting Service (QBS). Arabic. Time signal with station ID as "Qatar min al-Doha." Closing newscast at 2005 and "Al-Doha" ID. Arabic music and discussion. (Stephen J. Price, Conemaugh, PA)

2020 UTC on 9553
Equatorial Guinea: Radio Nacional. Usual religious programming in English by man. No IDs, but little question this is Radio Nacional. (Doug Waller, Bay Village, OH)

2058 UTC on 7110
Malta: Radio Mediterran. Gospel music and religious sermon. Station sign-off at 2115 UTC, and request for listener's reception reports. (Rod Pearson, St. Augustine, FL)

2159 UTC on 15365
Canary Islands: Radio Exterior de Espana. Spanish. Orchestra music and political speech. IDs at 2217 and 2238 UTC, followed by Mail Bag show with letters from Peru and Australian listeners. (Leslie Edwards, Doylestown, PA)

2245 UTC on k15300
United States: WCSN. Business report on foreclosures, classical Hungarian music, and "Letterbox" program. (George Neff, Tampa, FL)

2250 UTC on 11720
Canada: CBC NQS. Phone-in program on the rights of the Canadian Indians. Heard also on parallel frequency of 9625 kHz. (Bob Fraser, Cohasset, MA)

2258 UTC on 11955
Bulgaria: Radio Sofia. Station ID and news on Soviet/Bulgarian joint space mission. DX program on tuning receivers, and instrumental music. (Leslie Edwards, Doylestown, PA)

2315 UTC on 9915
United Kingdom: BBC-World Service. Station feature, From the Weeklies press review U.S./USSR relations. (Bob Fraser, Cohasset, MA)

2330 UTC on 9960
Clandestine: Radio Caiman. Spanish. Station IDs and Latin music selections. (Edouard S. Provencher, Biddeford, ME)

2349 UTC on 7065
Albania: Radio Tirana. Folk music and commentary on Canadian and Albanian relations in trade and culture. Classical music and eight note interval signal. (Leslie Edwards, Doylestown, PA)

Utility World

Larry Van Horn
160 Lester Drive
Orange Park, FL 32073

To the Rescue! To say that utility monitoring can be exciting listening has to be an understatement. Nowhere is this more evident than monitoring a disaster at sea. Two of our Utility World reporters this month tell their stories of disaster at sea as they heard it on their shortwave radios.

Mark Widerstrom in Houston, Texas, writes, "I wanted to write to your readers of a major rescue I picked up on the U.S. Coast Guard channels on shortwave. They were searching for an island hopper aircraft which went down in the water close to San Juan, Puerto Rico. The aircraft was a twin engine plane capable of carrying 20 people.

"It seems the plane disappeared from radar and a search was started. A Canadian warship, The Napagon, and a Coast Guard helicopter were in the area. Helo aircraft, number 1715, dropped a data marker buoy (DMB) which reports drift and marine information to data receivers. The DMB was transmitting on 242.65 MHz.

"After the DMB units were dropped, the Canadian warship checked his radar for blips of vessels or from the plane. The warship started a search pattern while calling San Juan Coast Guard communication station on marine VHF channel 21 and 5696 kHz.

"This search lasted on into the night. This was one example of an armchair rescue you just couldn't sit back and relax on."

Everyone on that plane was rescued, but our second story by Guy Delia in Chicopee, Massachusetts, doesn't have the same happy ending. He monitored the recent oil drilling rig disaster in the North Sea off the coast of Scotland.

Guy first heard of the disaster on a Navy MARS channel 14470.0. One U.S. Naval Vessel set up a phone patch to the U.S. Coast Guard to a rescue coordinator in Scotland. The following is what he heard.

Naval vessel: "We are in receipt of S.O.S. for oil platform fire. We can respond with five helicopters if needed."

Rescue Coordinator: "We request the help and it would be appreciated. What type of aircraft do you have to assist in rescue?"

Naval Vessel: "We have SH3F helos available. What is the status of the rescue?"

Rescue Coordinator: "There has been an explosion on an oil platform rig. 220 people on the rig; only 40 have been recovered. Helos on scene now."

Naval Vessel: "Our ETA is 0500 local time to assist. What HF frequency for the rescue is being used?"

Rescue Coordinator: "Monitor 5680.0 with Rescue Commander. He is on the scene now."

Guy then tunes into 5680.0 kHz and describes what he heard.

"Many helicopters and ships were on this frequency spotting lifeboats, fire and many casualties. The Naval vessel was monitored discussing with the Rescue Commander the ship's ETA and how many aircraft to launch. A head count was underway and the helos were asking about the number of litters on each craft. There was a BBC helo on the scene, but its involvement in the rescue or reporting over the air was not known."

Calls possibly heard in such an exchange might be the USS Hayler (DD-997), callsign NRWH, with a phone patch to the U.S. Coast Guard New York to the Rescue Coordinator in Edinburgh, Scotland.

I would like to thank Mark and Guy for sharing their fine reports with our readers and this is just a couple of examples of the excitement to be heard in the world of utility monitoring.

Airline Airways Station Profile

William Jarrett in Knoxville, Tennessee, recently received a nice letter verification from the South African Airways Station in Johannesburg. The station enclosed a fact sheet on the history of the station which William wanted to share with *Monitoring Times* readers.

Our station callsign was ZUR but later changed to simply Springbok Johannesburg as we are known today. The station was first established June 28, 1956. After some initial teething problems and the outfitting of some outdated equipment, we can claim as early as November 1957 to have direct continuous telegraphic communications with SAA aircraft throughout its entire route structure.

This was a unique feature in the civil aviation world and SAA gained worldwide recognition as a result.

With the advent of jet aircraft in 1960, and advances in radio technology, the radio station purchased single sideband equipment and was the first airline in the world to use this revolutionary method of radio communication. The first tests were carried out between June 21 and July 31, 1961, with outstanding results.

Starting in 1962, ZUR now had continuous voice communication with all SAA aircraft throughout its entire route structure.

Thus on August 21, 1963, when the last of the North African states prohibited SAA from overflying their territory, SAA was equipped with a highly efficient and flexible communications system, which enabled reliable communications between headquarters and flights affected by this last minute ban. On August 22, 1963, SAA changed its route structure to Europe without cancellation of a single service. This feat could not have been accomplished without the aid of direct communications.

Since those early days, numerous other airlines have approached SAA requesting information, and then establishing similar radio stations to ours.

During 1981 and 1984 Springbok Johannesburg was severely struck six times by lightning. This resulted in equipment deterioration to such an extent that the whole station had to be replaced.

Today, Springbok Johannesburg is the long distance operational communication (LDOC) centre of South African Airways. We utilize seven frequencies on a 24 hour basis. These frequencies are as follows: (all in kHz) 3013, 5532, 8933, 11354, 13330, 17925, 21943.

There are ten Racal receivers and two 10 kilowatt transmitters with a TCI Model 540 omni-gain antenna plus two log periodic antennas.

The station will verify correct reception reports if sent to the following address:

Office of the Chief Director
(Flight Operations)
South African Airways
P.O. Jan Smuts Airport
1627 Johannesburg
Republic of South Africa

A big Ute World "thank you" to William Jarrett for submitting this information on Springbok Johannesburg.

Utility World

In Orbit Over MARS?

Well, maybe not literally but Andy Gordon in West Hartford, Connecticut, is definitely one of the most committed navy and navy MARS monitors in the country. Andy says that his radio hobby has rewarded him several times.

"I have been invited aboard the USS Mobile Bay, USS Kidd, USS America, USS Germantown, USS San Jacinto, USS Simpson, and the USS Edson to name a few."

This month Andy has sent in some excellent intercepts that not only represent the more active channels in use, but give a good representation of the ships that can be monitored. The frequencies Andy monitors are probably the best chance a listener will have of working and verifying navy ships. On most navy channels, the ships use tactical callsigns which change frequently to preclude identification of the ship being monitored. Andy uses two receivers, a Sony 2010 and the Japan Radio NRD-515.

2716.0 Navy Harbor Common Channel

NAOD-USS Sierra (AD-18)	Working Charleston Navy Tug Control
NCAR-USS Carr (FFG-52)	Working Charleston Navy Tug Control
NCQI-USS Ainsworth (FF-1090)	Working Norfolk Tug Control
NDIK-USS Miller (FF-1091)	Working Newport Port Control (was answered by Navy Tug Santaquin YTB-824 (most unusual)
NDWQ-USS Detroit (AOE-4)	Calling Mayport Tug Control
NEGX-USS Fulton (AS-11)	Working Norfolk Tug Control
NEQB-USS Vulcan (AR-5)	Working Norfolk Tug Control
NEWZ-USS Deyo (DD-989)	Working Newport Port Control
NGHX-USS Wainwright (CG-28)	Working Charleston Tug Control
NHAR-USNS Sealift China Sea (T-AOT-170)	Working the USS Canisteo (AO-99)-NJVJ
NIDC-USS Valdez (FF-1096)	Working New York Port Control
NJAC-USS San Jacinto (CG-56)	Working Norfolk Tug Control
NJLK-USS Kauffman (FFG-59)	Working Newport Port Control
NJPX-USS Nassau (LHA-4)	Working Norfolk Tug Control
NKIN-USS California (CGN-36)	Calling Alameda Port Control
NKIY-USS Batfish (SSN-681)	Working "QHM" (Queen's Harbor Master) Halifax, Nova Scotia
NNJH-USNS Joshua Humphreys (T-AO-188 (new oiler)	Working Norfolk Tug Control
NNTR-USS Theodore Roosevelt (CVN-71)	Working USS Canisteo (AO-99)-NJVJ
NOAL-USS Affay (MSO-511)	Working USS Edson (DD-946)
NTGS-USS Spartanburg City (LST-1192)	Working Little Creek Harbor Control
NTMV-USS Patterson (FF-1061)	Working Newport Port Control
NXSF-USS Edenton (ATS-1)	Working Little Creek Tug Control
NZBI-USS McCloy (FF-1038)	Working Navy Bermuda Control

In years past the navy had a high seas, official-type, business radio telephone network called NORATS. This abbreviation was later changed to ICSB, and during the early 1980s, became known as CSS (ICSB is still sometimes heard). Andy has sent some examples of the ships heard on a common ICSB channel 4066.1.

ICSB Ship Channel 1-4066.1

NAHM-USS Guam (LPH-9)	Working Norfolk ICSB
NANT-USS Antietam (CG-54)	Working San Diego CSS-1
NCVV-USS Carl Vinson (CVN-70)	Working San Diego CSS-1
NIJA-USS Coral Sea (CV-43)	Working Norfolk ICSB
NLVQ-USS South Carolina (CGN-37)	Working Norfolk ICSB
NNUL-USS Constellation (CV-64)	Working San Diego CSS-1
NTJZ-USS William H Standley (CG-32)	Working San Diego CSS-1
NUSA-USS America (CV-66)	Working Norfolk ICSB
USS Oklahoma City (SSN-723)	Calling NAVCAMSLANT and Norfolk ICSB (Note: this sub had not yet been commissioned.)

Finally, the third way to hear Navy ships in the clear is by listening to navy MARS channels. For the most part navy MARS operators are amateur radio operators and understand reception reports and verification requests. The following is a representative list of recent MARS traffic.

13826.0 kHz

NNNOCHS-USS	Vincennes (CG-49/NVIN (Ship that shot down the Iranian airliner)

14441.5 kHz

NNNOCBG-USS	Samuel B. Roberts (FFG-58)/NSBA (Ship that hit mine in Persian Gulf)
NNNOCNB-USS	Juneau (LPD-10)/NROP
NNNOCNH-USS	New Jersey (BB-62)/NJZY
NNNOCOD-USS	Dewey (DDG-45)/NOHW
NNNOCOZ-USS	Forrestal (CV-59)/NJVF
NNNOCTQ-USS	O'Brien (DD-975)/NECG
NNNOCUI-USS	Hermitage (LSD-34)/NRVF
NNNOCUR-USS	Savannah (AOR-4)/NFJF
NNNOCZD-USS	Conyngham (DDG-17)/NHLT
NNNOCZV-USS	Hayler (DD-997)/NRWH
NNNONZK-USS	Vreeland (FF-1068)/NMAP
NNNONZQ-USS	Coral Sea (CV-43)/NIJA

14467.0 kHz

NNNOCOA-USS	Raleigh (LPD-1)/NEDO
NNNOCSE-USS	Elmer Mongomery (FF-1082)/NQJH
NNNOCUQ-USS	Frank Cable (AS-40)/NGXQ
NNNOCVB-USS	Dahlgren (DDG-43)/NJZU

14477.0 kHz

NNNOCQG-USNS	Chauvenet (T-AGS-29)/NYGG
NNNOCUO-USS	Spruance (DD-963)/NDQV
NNNOCYH-USS	Fahrion (FFG-22)/NFGF
NNNONAP-USS	Milwaukee (AOR-1)/NLDL

14818.5 kHz

NNNOCLF-USS	Valley Forge (CG-50)/NVFP
NNNOCLL-USS	O'Callahan (FF-1051)/NZKI

Thanks to Andy Gordon for his unique insight into this aspect of the Utility World.

In the Mailbag

Rick Matthews in Vancouver, British Colombia, has sent along a follow-up to the July column's "unknown network" mystery. Rick says stations WNIM867/WNHI785 are Southwestern Bell stations and WNFT417 is Bell Communications. He further states that they have a number of HF frequencies such as: 2194, 3155, 4438, 5005, 6763, 7300.

Since 6803 did not appear in his listing, Rick says it is probably a new frequency. Rick and several others also sent a correction concerning the aircraft callsign Speedbird. It should read British Airways instead of BOAC which was changed several years ago. The 9118-GPA4 mystery has also been solved. It is Portishead Radio, England, and Rick says they are also on 17426 kHz using the callsign GPA6.

One last item from our neighbor to the north, Rick says concerning my 3366 kHz logging several months ago; the frequency is assigned to ships in the Atlantic/North Sea areas by the Norwegian government. Thanks for the valuable information Rick and be sure to check in often!

Tim Ames recently wrote to mention an interesting frequency used on the western missile test range out of Vandenberg AFB, California. Tim writes, "On the days when they have launches off Vandenberg, they have the Navy out there warning ships to stay away from the missile firing area. I stumbled onto the HF control frequency. It is 5080 kHz USB and I listened to a NOAA ship check in with frontier control on that frequency."

The navy ships and helicopters check in with the control station on this frequency and then go on to other frequencies. If they have any problems they always contact each other on 5080. This channel is usually active right on into a launch and then disappears. Thanks for the interesting frequency, Tim.

Another Tim, Tim Tromp, might have stumbled on another Federal Highway Administration frequency. Tim heard WWJ40 working WWJ74 in USB around 2307 on 7420 kHz. Tim said both stations went to channel "F3" at 2312. On another occasion Tim hear WWJ45 at 0021 in USB on 7420. On this occasion the station switched to Channel "F7." Very interesting Tim, and if you or any other Ute World readers catch any of these WWJ stations, be sure to drop us a line.

Utility World

Utility Loggings

Abbreviations used in this column

All times UTC, frequencies in kilohertz. All voice transmissions are English unless otherwise noted.

AM	Amplitude modulation	ISB	Independent sideband
ARQ	SITOR	LSB	Lower sideband
CW	Morse code	RTTY	Radioteletype
FAX	Facsimile	UNID	Unidentified
FEC	Forward error correction	USB	Upper sideband
ID	Identification		

2716.0 USS Trippe (FF-1075) working Newport Port Control in USB at 1355. USS Yellowstone (AD-41) working Newport Port Control in USB at 1228. (W>J> Battles, East Kingston, NH) Welcome aboard W.J. Nice to see you back-ed.

3071.0 Sam 86972 working "Andy" (Andrews AFB) in USB at 0145. (W.J. Battles, East Kingston, NH)

3253.0 USCGC Thunder Bay (WTGB-108) working coast guard group Boston in USB at 1113 with a SAR mission. (W.J. Battles, East Kingston, NH)

4128.1 Aircraft N601P working WLO with phone patch traffic un USB at 1321. (W.J. Battles, East Kingston, NH) Real odd one here!!-ed.

4235.0 VAI-Vancouver CG Radio with CW traffic at 2338. (Tom Roach, San Jose, CA) Welcome back to the column, Tom-ed.

4263.2 ZLO-Irirangi Naval Radio, New Zealand, with an AR DE CW marker at 0950. (Jim Boehm, San Antonio, TX) Welcome back to the column, Bill-ed.

5320.0 NIK, USCG Radio Boston, Massachusetts, transmitting an International Ice Patrol bulletin in CW at 0050. (Sam Ricks, Philadelphia, PA) Glad to see a return visit, Sam, Please report often-ed.

5550.0 VARIG 810 working New York in USB at 0643 reporting over Zandery (Surinam) With an estimate for Cabo Rojo at 0850 and ETA Miami of 1025. (Cabo Rojo is a reporting point over the Dominican Republic) (Garie Halstead, St. Albans, WV) Thanks for the logs, Garie, nice to see you back-ed.

5598.0 Pan American "Clipper 202" working San Juan in USB at 0630 reporting over Adams (International Airport on Barbados.) (Garie Halstead, St. Albans, WV)

5616.0 Aeroradio ATC Gander Newfoundland, working navy Lima 45 in USB at 0157. Aircraft requesting Gander relay position report to New York. (Trevor Stanley, Flagstaff, AZ)) Welcome back to the column, Trevor-ed.

5696.0 CG 1493 (HH3F Aircraft) working COMSTA Boston in USB at 1851 reporting #2 engine out (later landed safely). (W.J. Battles, East Kingston, NH)

5810.0 Female Spanish four digit numbers station at 0330 (Wednesday UTC) parallel to 6810. (Bill Cantrell, Haslet, TX) Welcome back to the column, Bill, Thanks for the logs-ed.

5850.0 Halifax Military (Canada) working Port St. Jean in USB at 2349. (W.J. Battles, East Kingston, NH)

6257.9 UNSU-Soviet Cargo Ship Velizh with position and weather report to Leningrad via CLJ, Havana Morflot Radio at 0015. Transmitting RTTY 50 baud/170 Hz shift. (Sam Ricks, Philadelphia, PA)

6261.9 UBRA-Soviet RO/RO Container Ship Astrakhan with cargo plan in English/Spanish to URD Leningrad Radio at 0115. Enroute to Havana and Santiago, Cuba. Transmitting RTTY at 50 baud/170 Hz shift. (Sam Ricks, Philadelphia, PA)

6430.0 CFH-Maritime Command Radio Halifax, Nova Scotia, at 0242 in CW with a CQ marker tape. (Tom Roach, San Jose, CA)

6460.0 UKA-Vladivostok Radio, USSR heard with CW traffic for Severoural'sk. (Tom Roach, San Jose, CA)

6506.4 NMN-CG COMSTA Portsmouth, Virginia, working USCGC Victoria at 0225 in USB. (Trevor Stanley, Flagstaff, AZ)

6509.5 KVH (Atlantic Marine Center), Virginia, working Echo Whiskey talking about problems with satellite tracker in USB at 1410. (W.J. Battles, East Kingston, NH)

6693.0 USCG 1503 (C-130) working St. John's Military in USB. Requesting radio guard at 1231. (W.J. Battles, East Kingston, NH)

6715.0 Sam 86972 working Andrews with phone patch to Shannon Ops in reference to the champagne glasses in USB at 2156. (W.J. Battles, East Kingston, NH)Andrews working Sam 24126 at 0011 in LSB (W.J. Battles, East Kingston, NH)

6731.0 "Andy" working Sam 31681 and 31682 in USB at 2159. (W.J. Battles, East Kingston, NH)

6738.0 Ascot 4793 working Architect (Royal Air Force Great Britain) in USB at 0508. (W.J. Battles, East Kingston, NH)

6753.0 VXA-Edmonton Military, Alberta, in USB reading weather reports from Quebec City, North Bay, Trenton, Ottawa and Duncanville at 0020. (Fraser Bonnett, Kettering, OH) Welcome to the column, Fraser, Please report often-ed.

6756.0 Navy 511 working Andrews with patch traffic in LSB at 1925. (W.J. Battles, East Kington, NH)

6760.0 271 working Andy with a patch to Moose Tag in LSB at 1215. (W.J. Battles, East Kingston, NH)

6761.0 KISRA 52 with phone patch traffic to Blackwater Control bvia Hibiscus in USB mode at 0123. Sent Iten 5 "Sitrep" situation report. USAF-SAC Quebec channel. (Sam Ricks, Philadelphia, PA)

HIFI-33 working Edgewood with a phone patch to Port City Control requesting weather for Pease AFB at 0151 in USB. (W.J. Battles, East Kingston, NH)

6800.0 "ZERO" and "ONE" in USB volce then RTTY at 1401. (No idea who this could be). (W.J. Battles, East Kingston, NH) Interesting, I am at a loss, any ideas out there??-ed.

6802.0 Female Spanish four digit numbers station at 0215 (Thursday). Also heard a D CW beacon under the numbers station (Frank Mierzwinski, Mt. Penn, PA) Welcome to the Utility World, Frank. Please report often-ed.

6840.0 Female Spanish four digit numbers station at 0249 (Monday) with interference for a whistler. (Bill Cantrell, Haslet, TX)

7450.0 Female Spanish five digit numbers station at 0800 (Wednesday) parallel 8190. (Bill Cantrell, Haslet, TX)

7495.0 Female Spanish five digit numbers station heard at 0405 (Saturday). (Bill Cantrell, Haslet, TX)

7530.0 Female Spanish five digit numbers station at 0700 (Wednesday) with Altencion 893 0102. (Bill Cantrell, Haslet, TX) (Bill Cantrell, Haslet, TX).

8101.0 Advantage calling Black Ant on SAC Alpha Papa in USB at 2354. (W.J. Battles, East Kingston, NH)

8299.0 UIDJ-Soviet Cargo Ship Krasnouralsk with cargo plan in English/Spanish to URD Leningrad Radio at 2346. Enroute to Mariel, Cuba. Transmitting RTTY at 50 baud/170 Hz shift. (Sam Ricks, Philadelphia, PA)

8344.4 UQTV-Soviet Tanker Lenino, with English traffic to Havana Morflot Radio CLJ at 0004. Transmitting RTTY at 50 baud/170 Hz shift. Enroute to Santiago Cuba. (Sam Ricks, Philadelphia, PA)

8410.0 Female Spanish four digit number station with tune up at 0544 (Wednesday) broadcast at 0600. (Bill Cantrell, Haslet, TX)

8436.0 UFH-Petropavlovsk Radio, USSR with CW traffic at 0544. (Tom Roach, San Jose, CA)

8502.0 NIK, USCG Radio Boston, Massachusetts, transmitting an International Ice Patrol bulletin in CW at 0050. (Sam Ricks, Philadelphia, PA)

8555.0 UFN-Petropavlovsk Radio, USSR, heard with CW traffic at 0534. (Tom Roach, San Jose, CA)

8544.0 DZF-Manilla (BACOOR) Radio, Phillipines, in CW with alternate markers: CQ CQ DE DZF MANILLA BACOOR RDO QSK CHN4 COM 8/11 thenCQ CQ DZF QSW 8544 12828 QRJ TLX? Simulcast 8544/12828 -- thought QRJ meant restricted to radiotelephone but used here with TLX in a CW marker. Anyway, no frequency list needed to ID this one. (Jim Boehm, San Antonio, TX) For QRJ my list shows I have radiotelephone calls to book-ed.

8558.4 KFS-San Francisco Radio, California, in CW at 0153 working 8LSV, a Japanese vessel called "Shinhimeraru" with a message from Anchorage concerning inspection on arrival. (Garie Halstead, St. Albans, WV)

8570.0 WNU-Slidell Radio, LA in CW at 0203 working the "White Arrow" with a message emphasizing the washing of decks and inspecting for any dead insects especially under hatch covers before reaching U.S. territorial waters. (Garie Halstead, St. Albans, WV)

8609.2 CLJ-Caibarien Radio, Cuba, in CW at 0543 working the Soviet vessel UTFH. (Garie Halstead, St. Albans, WV)

8825.0 SAM 60200 working Gander ATC in USB at 1635. (W.J. Battles, East Kingston, NH)

8843.0 Navy 50607 working Honolulu in USB at 0510. Honolulu advised he had been calling on this frequency and 5574 since 0437. (Definitely sounded ticked). (Garie Halstead, St. Albans, WV) Those navy guys were probably thinking about their next liberty, Hi.-ed.

8864.0 South Pacific 119 working Nandi (Fiji) in USB at 0621 with a position report. Pilot advised he would call again when on the ground in Pago Pago. (Garie Halstead, St. Albans, WV)

8891.0 Lufthansa 4275 working Cambridge Bay in USB at 0725 with a position report over 70 degrees west on Alfa Track (over Baffain Island above the Artic Circle). (Garie Halstead, St. Albans, WV)

8964.0 Rent-a-Cop working Hickam AFB, Hawaii, in USB at 0407 and Loring AFB, ME working Music 88 with patch to Music Base at 1403 in USB. (W.J. Battles, East Kingston, NH)

8989.0 McClellan AFB, California, working MAC "177" aircraft requesting aviation weather for Norton AFB, California, at 0100 in USB. (Trevor Stanley, Flagstaff, AZ)

8993.0 Chinaware calling MacDill AFB in USB mode at 0100. Switched to 9018 USB and 11228 USB to transmit encrypted RTTY at 75 baud and MAC 950230, a C-141 with 39 passengers aboard calling MacDill AFB. Talking about a problem with #4 engine. Aircraft was diverted to Altus AFB. Mode was USB at 0036. (Sam Ricks, Philadelphia, PA)

U.S. Military aircraft using callsign Bunk 25 heard working MacDill AFB in USB at 0537 requesting a phone patch with Charleston Command Post. Gave ETA for Charleston as 0745. (Garie Halstead, St. Albans, WV)

Utility World

9007.0 SAM 60200 working Andrews in USB at 1447 (W.J. Battles, East Kingston, NH)

9270.0 Air Force Two working Andrews in USB at 1535 (This is a new freq for me). (W.J. Battles, East Kington, NH) This is F-292 Mustic Star-ed.

10780.0 Aria 4 working Cape Radio with a radio chick in USB at 1511 and MAC 60196 working Antigua Control in USB at 1225. (W.J. Battles, East Kinston, NH)

11035.0 Patina working Andrews AFB in USB at 2325. (W.J. Battles, East Kingston, NH) This is F322 Mystic Star-ed.

11055.0 "Andy" working UNID USAF unit. Andy chewed the UNID out for stepping on patch with Timberwolf (VP Bush). Heard in USB at 0042. (W.J. Battles, East Kingston, NH)

11118.0 Black Ant working Advantage in USB at 0014. (SAC-F315 Mustic) (W.J. Battles, East Kingston, NH)

11120.0 Female Spanish five digit numbers station at 0745 (Wednesday). (Bill Cantrell, Haslet, TX)

11180.0 SAM 60200 working Croughton AFB, England, in USB at 1957. (W.J. Battles, East Kingston, NH)

11195.0 Andrews calling SAM 24127 in LSB at 0235 (this is a new frequency). (W.J. Battles, East Kingston, NH) Interesting W.J., it definitely is new. Wonder what site this one belongs to. Since it is LSB, probably part of Mystic Star-ed.

11214.0 Bandsaw Juliet working several units in reference to AWACS and Half Quick ops in USB at 1355 (NORAD) and 1705 in USB hear Palimino and Juliett in patch with Bandsaw Juliet via Trenton in reference to cords for KL-43s needed. Also mentioned testing transmitter on broadcast frequencies without using Hf filters. (W.J. Battles, East Kingston, NH)

11228.0 MacDill AFB (Florida) working Diplomat in USB with a radio check at 1342. (W.J. Battles, East Kingston, NH)

11246.0 Airevac 50218 working MacDill AFB, Florida, with patch to Portsmouth, Virginia, Hospital Emergency Room at 1931 in USB. (W.J. Battles, East Kingston, NH)

11288.0 Bonnie Sue working Slingshot in USB at 1531 (Anti-smuggler ops). (W.J. Battles, East Kington, NH)

11300.0 Air Afrique 625 working Khartoum in USB at 0424 with position report and estimate for Oscar Bravo Delta (El Obeid). (Garie Halstead, St. Albans, WV)

11306.0 Eastern 4505 working Lima Radio in USB at 0617 reporting over Montego BAy at 0616 and estimating Alegre (Cuba's northern coast) at 0644. Aircraft reported a light chop with thunderstorms in the area. Destination Miami. (Garie Halstead, St. Albans, WV)

11520.0 Female Spanish four digit numbers station at 0405 (Thursday) (Bill Cantrell, Haslet, TX)

12135.0 NAM-Norfolk Naval Radio, Virginia, at 2220 in CW with a marine weather bulletin at 18 WPM. (David Kimpton, Thunder Bay, Ontario)

12494.9 Soviet icebreaker Moskva with Radio Kriptogramma to two Soviet spaceflight tracking shipe Kosmonaut V. Komarov and Kosmonaut U. Gagarin via UAT Moscow Radio at 0030. Transmitting RTTY at 50 baud/170 Hz shift. (Sam Ricks, Philadelphia, PA)

12497.9 UJEH-Soviet Replenishment Tanker Vidnoye, also identified by pendant number MN-0253, with coded aviation surface weather report to Murmansk Radio at 0127. Transmitting RTTY at 50 baud/170 Hz shift. Tanker assigned to the Soviet northern fishing fleet (SEVRYBA) to refuel Soviet fishing trawlers at sea. (Sam Ricks, Philadelphia, PA)

12522.4 UUVO-Soviet Spaceflight Tracking Ship Kosmonaut Vladimir Komarov with Russian traffic to UFB Odessa Radio at 0046. Enroute to Cueta, Spanish Morocco port to transfer crew. Transmitting RTTY at 50 baud/170 Hz shift. Also monitored UPUI-Soviet Hydromet weather research ship Professor Vize with Russian traffic for URD Leningrad Radio at 0155. Enroute through Suez Canal from Singapore. Transmitting RTTY at 50 baud/170 Hz shift. (Sam Ricks, Philadelphia, PA)

12523.9 UZZV-Soviet Spaceflight Tracking Ship Kosmanaut G. Dobrovolskiy with Russian traffic to URD Leningrad Radio at 2346. Departed Copenhagen enroute position off Togo. Transmitting RTTY at 50 baud/170 Hz shift. (Sam Ricks, Philadelphia, PA)

12524.4 URWW-Soviet Polar Research and Supply Ship Nikhail Somov with German traffic for UAT Moscow Radio at 0108. Departing Hamburg, West Germany, transmitting RTTY at 50 baud/170 Hz shift. (Sam Ricks, Philadelphia, PA)

12595.0 M/V West Islands, CW callsign C4IB of Cypriot registry heard in CW at 1449 working HPP-Panama Radio with a message for Serinaves Panama. Message in Spanish referred to a point on a nautical chart of Islamorda (Florida Straits?) (Garie Halstead, St. Albans, WV)

12602.0 Vessel with Belgian registry, CW callsign ONBA in CW at 0605 working 3BA-Mauritius Radio with an OBS message for Meteo Mauritius. (Garie Halstead, St. albans, WV)

12606.0 Japanese vessel "Hauke's Bay" callsign 7LBE heard working VIS in Australia in CW at 0612 with a message for Sydney. Gave pilots ETA at 0600 local time on the 29th (approximately seven days out). (Garie Halstead, St. Albans, WV)

12855.0 UBF2-Leningrad Radio, USSR, with a CW CQ marker at 0102. (Tom Roach, San Jose, CA)

12859.0 SVD-Athens Radio, Greece, in CW at 0642 calling the Bahamian vessel "C6DV" (Garie Halsteadd, St. Albans, WV)

12870.0 UKA-Vladivostok Radio, USSR, heard at 0346 with CW traffic. (Tom Roach, San Jose, CA)

12916.5 OXZ-Lyngby Radio, Denmark, in CW working the Soviet vessel UFHM-Motor Vessel Kapitan Yakovlev. The vessel's homeport is Riga. Heard at 0621. (Garie Halstead, St. Albans, WV)

12940.0 LZW-Varna Radio, Bulgaria, in CW at 0511 working the Bulgarian vessel LZDB. (Garie Halstead, St. Albans, WV)

12994.0 VIP40-Perth Radio, Australia, in CW at 0554 working D8ZK, a vessel of Korean registry called "West Junori" with a message from the harbormaster of the Port of Dampier. (Garie Halstead, St. albans, WV)

12954.0 CLS-Havana (Industria Pesquerra) Radio, Cuba, heard at 0103 with a CQ CW marker. (Tom Roach, San Jose, CA)

12966.0 UFB-Odessa Radio, Ukrainian SSR in CW at 0543 with three messages for Soviet vessel Ugwi. Callup is hand sent but traffic counds like high speed tape. (Garie Halstead, St. Albans, WV) Not sure on the ship for this one, Garie, not on any of my Soviet list. Any help on this one?-ed.

13000.0 UBE2-Petropavlovsk Radio, USSR, at 2200 with a CW traffic list and messages. (Tom Roach, San Jose, CA)

13055.0 UJQ7-Kiev Radio, Ukraine, SSR in CW at 0332 listing traffic for "UGZM." (Garie Halstead, St. Albans, WV)

13062.0 CLA-Havana (Cojimar) Radio, Cuba, in CW at 0237 heard working a Maltese vessel "9HRQ2." (Garie Halstead, St. Albans, WV)

13159.7 UNID Spanish station in USB with a five tone sequence repeated twice at 0325 followed by a Spanish voice announcement -- LPL in Argentina? (Bill Cantrell, Haslet, TX) Probably-ed.

13244.0 SAM 60200 working LAJES AFB (Azores) with phone patch to Croughton AFB, England, in USB at 1944. (W.J. Battles, East Kingston, NH)

MAC 67950 working Ascension Island Airways with phone patch at 1857 in USB. (W.J. Battles, East Kington, NH)

13248.0 German Air Force 196 working DHM-91 (West Germany) in USB at 2315. (W.J. Battles, East Kington, NH)

13306.0 Aeroradio ATC New York working United 196 in USB at 0312. Aircraft gave a position report. (Trevor Stanley, Flagstaff, AZ)

13371.5 NGR-Naval Radio NEA Makri, Greece, with a V CW marker at 0120. (David Kimpton, Thunder Bay, Ontario)

13496.7 SPW-Warsaw Radio, Poland, with "DE SPW" in CW then ARQ idler at 1612. Parallel 13602.5 (David Kimpton, Thunder Bay, Ontario)

14445.1 VDH9-Alert NWT Canada in USB working phone patch with CIW608 and CIW301 at 0358. (Canada Forces Amateur Radio) (David Kimpton, Thunder Bay, Ontario)

15000.0 BPM-XIAN, PRC Time Station with time pips and ID under WWV/WWVH. Heard ten BPMs in Morse Code followed by two voice announcements at 0229. Also heard LOL-Buenos Aires, Argentina, time station kwith time pips and Morse code ID under WWV/WWVH at 0004. (Stan Mayo, Westbrook, ME)

15024.0 COL, Havana Aeroflot Radio transmitting in CW to RFNV Moscow Aeroflot Radio regarding flight between Managua and Havana at 0000. (Sam Ricks, Philadelphia, PA)

COL, Havana Aeroflot Radio passing CW flight information at 1400. (Tom Roach, San Jose, CA)

15621.0 ALFA calling COAM in CW at 2115. COAM replies and authenticates with 2121. Spanish message consists of vegetable list with a price and date. Cuban Navy? (Jim Boehm, San Antonio, TX) Probably, Bill, but HDN Ecuadorian Naval reported here. COAM could have been a routing indicator that they use-ed.

15992.0 4UZ-United Nations Geneva, Switzerland, with a RY test tape at 0349. Transmitting RTTY at 75 baud/425 Hz shift/reverse sense. (Sam Ricks, Philadelphia, PA)

16695.9 UHPN-Soviet Replenishment Tanker Linkuva with traffic for URB-2 Klaipeda Radio at 2259. Just fueled a Cuban fishing trawler off Canada. Transmitting RTTY at 50 baud/170 Hz shift. Tanker assigned to Soviet Baltic fishing fleet Zapryba. (Sam Ricks, Philadelphia, PA)

17426.0 GPA6-London, England, with CW ID tape followed by high speed traffic at 0137. (David Kimpton, Thunder Bay, Ontario.

17992.0 DHM91 (West Germany) working German Air Force 21 and 573 on Foxtrot Quebec (WWW) in USB at 1725. (W.J. Battles, East Kingston, NH)

18027.0 Air Force One working "Andy" (Andrews) with patch to Crown at 1944 in USB. (W.J. Battles, East Kingston, NH)

18461.7 PCW1-Hague, Netherlands, with CW ID tape followed by high speed traffic at 2328. (David Kimpton, Thunder Bay, Ontario)

18666.0 Pacman working Atlas with patch traffic at 1748 in USB (DEA/Customs) W.J. Battles, East Kingston, NH) and coast guard also-ed.

Atlas working 421 and 610 regarding supplies/sked at 2047. Panther working A/C 15A at 2055. All in USB. (David Kimpton, Thunder Bay, Ontario)

18766.1 SCR sending "VVV SCR" at irregular intervals in CW at 2100. (David Kimpton, Thunder Bay, Ontario) Nothing on my list, David-ed.

20970.0 VXV9-CFARS Golan Heights, Syria, in USB with phone patch traffic into Canada via CIW605 at 2046. (David Kimpton, Thunder Bay, Ontario)

21760.0 NRV-Naval Radio Agana, Guam, with a CW weather forecast for the Indian Ocean at 1830. (David Kimpton, Thunder Bay, Ontario)

21764.0 RCV-Moscow Naval Radio calling UCBS then passed traffic at 18-20 WPM. (David Kimpton, Thunder Bay, Ontario)

The Scanning Report

Bob Kay
P.O. Box 173
Prospect Park, PA 19076

He was leisurely walking to lunch when he noticed the thick black smoke billowing from the roof of the three story building.

On a nearby lawn a woman was desperately trying to free herself from the restraining arms of two men. "My baby, my baby!" she yelled. As he ran up to her she pleaded with him, "Please save my baby!"

"Where?" he asked, in a controlled, urgent tone.

"Second floor, Apartment 2-B," she answered from behind tear swelled eyes.

"You can't go in there buddy," one of the men shouted, "the smoke is so thick it will choke you in seconds."

He never hesitated nor considered the danger. Moments later he was inside the burning structure. The steps leading to the second floor were right at the entrance. Halfway up, the stairs became engulfed by dark, angry, twisting columns of smoke. "A stairway to hell," he thought as he took a deep breath and desperately tried to find door 2-B.

ENGULFED

Outside, sirens pierced the small suburban town's silence as fire apparatus converged on the scene from every direction. When the first company arrived, the fire chief immediately called in a second alarm on 46.380 MHz.

Water hoses were unrolling from behind fire trucks like strands of twisted rope. Vehicle PA systems were activated and the transmissions taking place on 46.480 (dispatch) and 35.68 (rescue), could be heard by the large crowd that was gathering on the sidewalk.

"Hey, chief," a policeman yelled, "we just got word that someone ran into the building to rescue a baby."

"The chief gestured that he understood and then pressed the button on his hand-held. "Station 8 to Station 2." The transmission echoed between the buildings on the narrow street.

"Station 2," came the reply.

"Do you have men in the building yet?"

"Negative."

"Get them in there fast; police radio reports that occupants may be trapped!"

"Ten-four, Chief."

The chief once again pressed the mike button on his hand-held.

"Station 8 to radio."

"Go ahead, Chief."

"I'm going to need additional rescue units and alert the surrounding hospitals of possible fire casualties."

"Ten-four Chief. Do you want the paramedics there?"

"Send me all you got," was the chief's reply.

The dispatcher immediately called the hospital by land line. Once the hospital had been alerted, it dispatched additional paramedics on 155.34 MHz.

BABY IN THE SMOKE

Inside on the second floor, he found Apartment 1-B and 3-B. But where was 2-B?

He went back and looked again, his eyes were nearly useless in the stinging smoke. There it was! The door numbers had been removed, only the faint outline of where

they once had been could be seen on the door.

Turning the knob, he was relieved to find that it was unlocked. Inside, he desperately searched every room, but nothing! Suddenly, he heard the faint sound of a baby crying. But where? The smoke was getting thicker by the second and his eyes were hurting so much that he could barely keep them open.

Controlling his emotions, he stood perfectly still and listened. The sound seemed to be coming from a dresser. Looking into the partially open bottom drawer, he saw the six month old infant.

Taking her into his arms, he knew that the next few seconds would mean the difference between life and death.

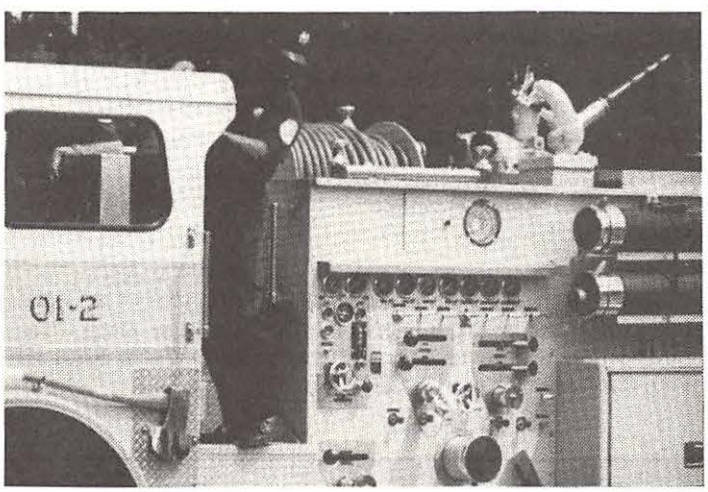
If he was to save the child, he would have to exit the burning building from memory -- his eyes would be of no use in the heavy smoke and fumes.

He had counted 18 steps on the way up to the second floor. Descending them, he discovered that there was one more step after the 18th -- he stumbled and fell against the wall. The baby was ok, but the air had been forced from his lungs. Running towards the front door, he didn't stop until he had carried the baby to the safety of the front lawn.

After collapsing, he was rushed to the hospital and treated for smoke inhalation and a dislocated shoulder.

Approximately one month later, he was a dinner guest in my home. Since only our wives had been friends, he and I had never met. After dinner, we retreated to my den and he was fascinated by my hobby of scanning. By late evening, I remember him commenting to his wife that they simply had to buy a scanner.

Two weeks later, my wife casually remarked that my new friend had indeed purchased a scanner, "That's good," I remember saying.



Don't let tuning in the action deter you from participating in public service -- where the real action is to be found!

"He likes it so well," my wife continued, "that he quit volunteering at the firehouse."

Suddenly it wasn't so good. After talking to him over the phone, I learned that he had turned in his four week old volunteer fireman's hat for a scanner radio.

"I can hear all the action, right from my living room," he anxiously announced. "In the middle of the night, when the siren sounds, I just turn on my scanner. I don't even have to get out of bed."

Somehow, I can't help feeling responsible. With a critical shortage of volunteers, some fire houses may be forced to close and combine with others. Volunteers are desperately needed throughout the entire country.

Some would argue that he probably would have given up on volunteering anyway, regardless of my influence. But every now and then I can't help but wonder -- would that little infant have been rescued, if my friend had been sitting home, listening to his scanner...?

Visiting the New Jersey State Police

Jeff Multer, of Gastonia, North Carolina, was recently in New Jersey on business. During his brief stay, he visited the Divisional Headquarters of the New Jersey State Police. According to Jeff, there's a little known museum inside the headquarters building that displays the development of the NJSP communications system.

Jeff also says that the display showed a Motorola DVP unit connected to an 800 MHz handheld. A mistake? I don't know.

Be Prepared

With winter nearly upon us, Donnie Lee Pardue, of Sanford, North Carolina, reminds everyone to be prepared for inclement weather. Donnie suggests that we have back up battery systems, along with complete frequency lists that can be referenced in a manner of minutes.

The staff here at *MT* also suggests that everyone make one last check of their outside antenna systems. It sure beats climbing the roof in the dead of winter!

Chips Detector

In a recent issue of *Car & Driver*, an unnamed company was advertising a scanner with a built in radar detector. Apparently, the scanner contains an alarm that is activated by the use of a mobile extender. A mobile extender is basically an amplifier that helps to boost the radio signal of both mobile and air units.

The ad reads, "The anti-aircraft weapon for highway patrol planes and the only protection against all forms of speed measurement."

Are you skeptical? Check this one out. Here's the manufacturer's toll free number: 800-521-4211. I'll be looking for-

The Scanning Report

ward to seeing your comments.

Flying with the U.S. Air Force

Norm Pihale, of Northfield, Minnesota, sent nearly three pages of confirmed USAF frequencies for his area. Here's a partial listing:

228.7	NORAD Channel 1/training
235.9	NORAD Weapons training
236.6	USAF ATC/OFFUTT AFB
241.0	ARMY "Miller Tower" Camp Ripley
243.0	"Guard Frequency"
255.4	Primary
257.8	USAF ATC/St. Paul, Duluth, Des Moines, Foss, Waterloo
299.1	ARMY Reserve/St. Paul
311.0	SAC In flight technical assistance
318.4	NORAD Ground station at Finland, MN
321.2	SAC Ground controlled intercept (GCI)
364.2	SAC Air intercept Control (AIC)
372.2	SAC Pilot to dispatch

Anyone that would like to have the complete listing, it's yours for an SASE.

Good News for Meter Readers

When the Philadelphia Gas Works tried to install automated meter reading devices on its customers' telephones, opponents successfully blocked the plan. Why? It was deemed to be an invasion of privacy to send such information over the telephone lines.

Star Wars

The USSR has conducted research and may test a strong radio frequency signal that could interfere with or destroy critical components of satellites by the early 1990s.

Examining the Med Channels

The FCC has decided to allow commercial companies to become licensed in the Special Emergency Radio Service (SERS). The change is expected to alleviate high start up costs and to provide incentive to use the most advanced communications equipment to save lives.

However, private users of the SERS system will not be permitted to offer MED services to any party that is not already eligible to communicate in the SERS system.

So what does all this mean to the scanner buff? Commercial companies will be jumping on board the SERS system with one idea in mind -- to turn a profit by providing a radio controlled medical service. In the long run, that will produce more radio traffic on the MED channels and more radio interference from other local emergency services. Listening to the MED channels during this initial phase-in period should prove interesting.

Talking Dirty

Les Matson, head honcho of the excellent *North-east Scanning News* bulletin, knows all the latest scanning "dirt." But, says Les, "if you want to hear some real mud-slinging, monitor the American Dredging Compny from Camden, New Jersey, on 31.520."

Les has also found a rather little-known repeater for the distress frequency, Marine Channel 16. It's 171.3375. What's neat about it is that the repeaters are located on nearly all the bridges spanning the Delaware River. That means communications can be heard from Baltimore all the way up to Shinnecoke, New York! Plug this one into your scanner before all the weekenders take their boats out of the water for the year.

Meanwhile, we're happy to point out that *NESN* is now up to 213 subscribers. If you live in the northeast and don't get *NESN*, you don't know what you're missing. Check it out. Send $2.00 to Les Matson at 212 West Broad Street, Paulsboro, New Jersey 08066.

Other Bulletins

Writing in the All Ohio Scanner Club's *American Scannergram*, Blaine Brooks of Tucker, Georgia, has the following frequencies for the Atlanta area:

166.000	IRS Investigation Operations
418.225	IRS Operations
164.650	U.S. Secret Service
165.2125	U.S. Secret Service Mike
165.375	U.S. Secret Service Command Post
165.7875	U.S. Secret Service Baker

A lot of these frequencies have also been confirmed in Ohio and surrounding states. So, as column editor Dave Jones says, "do not despair if you program a nationwide frequency into your receiver and hear nothing. Sooner or later, it will show some activity.

Blaine also shared some Secret Service calls with readers of *Scannergram*, revealing that Jack Kemp was "Matrix", Jesse Jackson, "Pontiac" and Michael Dukakis, "Saw Horse."

For more information on AOSC's bulletin, send a self addressed, stamped envelope to P.O. Box 2496, Springfield, Ohio 45501.

The *RCMA* bulletin advises readers to Go West! In Carson City, Nevada, try 161.67 for KKBC, FM 97.3's news operations and 161.67 for KPTL, AM 1300. For more information on the RCMA bulletin, write to Carol Ruth at P.O. Box 542, Silverado, CA 92676.

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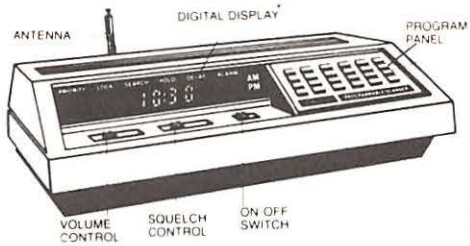

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BP55 Ni-Cad Battery Pack for 50XL	13.99	(*)
VC001 Carry Case for 50XL/55XLT	11.99	(7.00)
PS001 Cigarette Lighter Adapter for 50XL/100XL/100XLT	12.95	(*)
BEARCAT 140 AC Programmable Scanner	94.99	(5.00)
BEARCAT 145XL AC Programmable Scanner	98.99	(5.00)
BEARCAT 175XL AC Digital Scanner	159.99	(5.00)
REGENCY TS-1 Turbo Scan AC/DC	219.99	(7.00)
REGENCY TS-2 Turbo Scan 800 AC/DC	299.99	(7.00)
BEARCAT 210 XLT AC/DC Digital Scanner	189.99	(7.00)
BEARCAT 800 XLT AC/DC Digital Scanner	264.99	(7.00)
REGENCY HX-1500 Hand-Held Scanner	209.99	(7.00)
REGENCY MA-257 Cigarette cord for HX1000/1200	16.99	(7.00)
REGENCY MA-917 Ni-cad Battery for HX1000/1200	24.99	(*)
REGENCY HX-CASE Hvy Leath. case for HX1000/1200	19.99	(*)
REGENCY MA-549 Drop in charger for HX1000/1200	74.99	(5.00)
REGENCY MX-3000 AC/DC Digital Scanner	164.99	(7.00)
REGENCY Z-30 AC/DC Digital Scanner	99.99	(7.00)
REGENCY Z-60 AC/DC Digital Scanner	109.99	(7.00)
Mobile Mounting Bracket for Z Scanners	5.99	(*)
REGENCY RH-256 High Band Transceiver w/Ant.	329.99	(7.75)
REGENCY UC 102 Hi-VHF Hand Transceiver	119.99	(5.50)
REGENCY RH-606B High Band Transceiver w/Ant.	469.99	(7.75)
REGENCY R806 AC/DC Crystal Scanner	79.99	(5.00)
REGENCY INF-3 AC Informant Receiver	139.99	(7.00)
REGENCY INF-5 AC Informant Receiver	119.99	(7.00)
COBRA SR15 100 Channel Hand-Held	199.99	(7.00)
COBRA SR12 Digital Hand-Held Scanner	189.99	(6.50)
COBRA SR10 Digital Hand-Held Scanner	124.99	(6.00)
COBRA SR900 AC/DC Digital Scanner	104.99	(5.00)
COBRA SR925 AC/DC Digital Scanner	109.99	(7.00)
Book "Top Secret Registry of Gov't Frequency" 6th	14.99	(3.00)
Book "Covert Intelligence, Electronic Eavesdropping"	8.95	(*)
Book "Betty Bearcat Frequency Directory"	14.95	(*)
Book "Rail Scan Directory"	7.95	(*)
Book "Air Scan Directory"	12.95	(*)
RCD MRP-1 Single Channel Hand-Held	38.99	(3.00)
FANON M8HLU DC Crystal Scanner	89.99	(5.00)
FANON PSK-1 AC Adapted for M8HLU	12.99	(*)
FOX BMP-1060 AC/DC Digital Scanner	129.99	(5.50)
FOX Mounting Bracket for BMP-1060	9.99	(*)
ANT-1 Magnet Mount Mobile Scanner Antenna	29.99	(3.00)
ANT-6 Base Scanner Antenna w/50' cable	29.99	(3.00)
REGENCY CB-ONE CB Radio	34.99	(5.00)

UNIDEN **Bearcat** BC-600 XLT

$199.99 *($7.00 shipping)*

Digital Programmable 100 Channel Scanner

BC-600 XLT covers the following frequencies: 29-54 MHz, 118-174 MHz, 406-512 MHz. Features compact size of 6-5/16"Wx1-5/8"Hx7-3/8"D, scan delay, priority, memory backup, channel lockout, bank scanning, key lock, AC/DC power cords, telescopic antenna, mounting bracket supplied, one year factory warranty, search direct channel access, track tuning, service search including pre-programmed frequencies by pushing a single button for police, fire, emergency, aircraft, weather and marine services. Plus exclusive optional features never available on any scanner before. First is an RF receive amplifier for boosting weak signals for only $24.99 plus a CTCSS tone board is available for only $59.99 to make this the number one scanner available in the USA. Optional cigarette lighter plug #600MPC $4.99

BEARCAT BC-950XLT

Same features as BC-600XLT but also receives 800-954mhz.

$249.99 *($7.00 shipping)*

BEARCAT 70XLT

20 CHANNEL HAND-HELD SCANNER

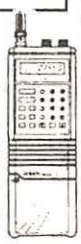
Small size 6"Hx1"Dx2¾"W, full digital readout, priority, search, channel lockout, scan delay, key lock. Covers following frequencies: 29-54mhz, 136-174mhz, 406-512mhz. Package includes rubber antenna, rechargeable Ni-Cad battery pack, AC adapter/charger, and carry case.

SPECIAL PACKAGE DEAL **$169.99** ($6.00 shipping each)

SCANNER WORK EXCLUSIVE

UNIDEN BEARCAT BC205XLT

$259.99 *(7.00 shipping each)*



Digital programmable 200 Channel hand-held portable scanner with raised button keyboard for easy programming of the following frequency ranges: 29-54MHz, 118-175MHz, 406-512MHz, 806-956MHz. Features include: Scan delay, memory backup, key pad lock, sidelit liquid crystal display, channel lockout, 10 twenty channel banks, direct channel access, automatic search, full one year factory warranty, 10 priority channels, Ni-Cad battery pack, AC adapter/charger, flexible rubber antenna, carry case are all included. Size is 2-11/16Wx1-3/8"Dx7-1/2" high. (Optional extended 2 yr warranty $59.99, 3 yr extended warranty $79.99).

SCANNER WORLD SPECIAL

COBRA SR-925

$109.99

(plus $7.00 shipping each)

Digital programmable, 16 channel, AC/DC mobile/base, with raised button keyboard for easy programming of the following frequency ranges: 29-54mhz, 118-174mhz, 406-512mhz. Covering aircraft, marine, police, fire, weather, trains, public service, plus much more. Features include: digital display, priority, scan delay, weather button, channel lockout, search, scan speed, automatic squelch, memory backup, one year factory warranty, external speaker jack. (Extended warranty 2 years extra $29.99, 3 years extra $39.99.)

ORDERING INFORMATION

Call (518) 436-9606 to place orders by phone or mail orders to ***Scanner World,*** 10 New Scotland Av., Albany, NY 12208. Orders will be shipped same day received by United Parcel Service. ***Scanner World*** accepts VISA, MasterCard (COD shipments by United Parcel will be for cash or certified checks only). Mail orders with personal or business checks will be held 4 weeks for bank clearance. Orders with cashiers checks or money orders shipped same day received. Prices, specifications and terms subject to change without prior notice. If items are out of stock we will backorder and notify you of delivery date. All shipments are F.O.B. ***Scanner World*** warehouse in Albany, NY. We are not responsible for typographical errors. All merchandise carries full manufacturers warranty. Bid Proposals and Purchase orders accepted from Government agencies. Free full line catalogue available upon request. No minimum order. New York State Residents add 7% sales tax. Any claims must be made within 7 days of merchandise receipt.

SHIPPING CHARGES

(*) Add ($) per scanner, and $3.00* for all accessories ordered at same time. C.O.D. shipments will be charged an additional $3.50 per package. Full insurance is included in shipping charges. All orders are shipped by United Parcel Service. Shipping charges are for continental USA only. Outside of continental USA, ask for shipping charge per scanner.

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what's new?

The Pocket Guide to Railroad Radio Frequencies - 1989

By Bruce K. Heald

Our cover article in the July 1988 issue drew considerable attention among railroad buffs. Appropriately, Bruce Heald's popular and comprehensive directory of railroad frequencies is now available as a brand new, considerably expanded edition.

Arranged alphabetically by every railroad in the United States as well as the majority of Canadian lines, listings include frequencies of yards and terminals, repeaters and handie-talkies.

Mass transit authorities (subways, trollies and elevated) are also included in this new edition and a frequency cross-reference allows the user to select unknown licensees heard on a particular frequency.

Although the title "*Pocket Guide...*" is still maintained, this edition would require a rather large pocket. Still, it can be folded for the veteran rail rider who wants to tuck the missal into his back pocket. The pages are printed in two columns, widely spaced at the center, to allow for such an expediency.

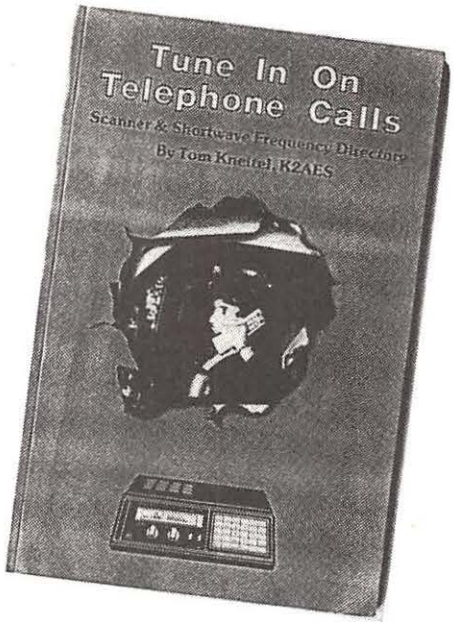
(60 pages, 8-1/2" x 11", staple bound; $9.95 including postage from Bruce K. Heald, 6886 Jefferson St., North Branch, MI 48461. Phone 313-688-3952)

Tune in on Telephone Calls

by Tom Kneitel, K2AES

Very little notice was given mobile telephones until the Electronic Communications Privacy Act (ECPA) of 1986 made it unlawful to listen to them. Now, hardly an issue of *MT* or *Popular Communications* goes buy without some reference to this service, and *PopCom*'s editor, Tom Kneitel, has just released a book detailing how to eavesdrop on callers!

So what goes on over these frequencies? The same thing that goes on over wireline telephones, and our prurient interests hope to hear some really juicy stuff -- the stuff that Tom titillates the prospective



reader with in his news release:

> "They argue, reveal personal and business secrets, plan felonies, make legal and illegal deals, buy stocks, make investments, offer/accept bribes/kickbacks, deal drugs, brag, lie, get engaged/divorced, accuse one another of cheating, conduct lurid or illicit romances, get hired/fired, get into and out of jams, gripe about money woes, engage in highly charged family hassles, ridicule co-workers and neighbors, make indecent proposals, gossip, and more."

Correctly, Kneitel points out that few of these radiotelephone users have the slightest suspicion that their deepest secrets are being purveyed over the airwaves for miles, yet there they are, and here is a book telling you just where to tune to hear them.

Emphasizing frequency allocations in the U.S. and Canada, *Tune In* presents complete frequency lists for ship-to-shore, air-to-ground and land mobile telephone services from HF (shortwave) through UHF (cellular). Cross-referenced by city and state, the book is a directory of radiotelephone services across the continent.

And for those conscience-ridden monitors who would like to own a copy but don't want to be stigmatized as voyeurs, you can always use the book as the consummate guide on where <u>not</u> to listen!

(160 pages, 6" x 9", perfect bound softcover; $12.95 plus $2 shipping from CRB Research, PO Box 56, Commack, NY 11725)

VHF/UHF Aircraft Directory

Interested in aircraft monitoring? This is the most enjoyable directory we have ever seen, packed with anecdotes by the author (who insists on anonymity) compiled over years of professional aeronautical communications and experiences.

This expanded second edition now includes HF aeronautical listings as well as air show frequencies, sports flying, commercial airlines, traffic reporting, military and special purpose communications across the United States, Canada and Mexico.

Listings are by service and location and, while not exhaustive in content, is a comprehensive representation of the major frequencies likely to be encountered by recreational monitors. An excellent value for aircraft buffs.

(147 pages, 8-1/2" x 11", plastic ring binder; $14.95 from D C Enterprises, 7887 Brandy Circle, Colorado Springs, CO 80920)

The ARRL Antenna Book

Fifteenth Edition

With kit building and homebrew projects at an all-time low, many experimenters and radio enthusiasts lament that there is

nothing creative left for the individual to do. Not so. Antenna experimentation is one area where virtually any installation can shine with improvement.

Whether you are a licensed ham, scanner listener, SWL or radio experimenter, the new edition of the ARRL *Antenna Book* has a wealth of information of value to you. Since its early days of about 200 pages, the girth and substance of the handy handbook have expanded dramatically.

Interested in basic antenna theory? The first three chapters will fill you in on the fundamentals. What are the types of antennas from which to choose? Have a look at chapter 4, details of specific antennas in chapters 5 through 20, and hardware notes in chapters 21 and 22.

Radio wave propagation, feedlines and testing procedures occupy the remainder of the book with an excellent biography of antenna-related articles previously published in *QST* magazine included.

Although the *Antenna Book* is slanted toward transmitting on amateur radio frequencies, it must be remembered that the basic principles of antenna design hold for both transmitting and receiving, and measurements for frequency ranges outside the ham bands can be scaled from the data given.

(733 page, 8-1/2" x 11", perfect bound softcover; $18 from the American Radio Relay League, Newington, CT 06111)

Newnes Radio Amateur and Listener's Pocket Book

by Steve Money G3FZX

Professionally illustrated and printed, this cute pocket handbook is intended as a quick lookup reference for radio enthusiasts of all persuasions, including hams and SWLs. Since the work was intended for British readership, amateur radio bands and operating rules and regulations are of little interest to North American hobbyists.

However, there is enough additional information of a general nature to be universally appealing. Data tables on international frequency allocations, emission designators, ASCII code, ship to shore frequencies, satellite band plans, electronic component symbols, world time zones, electrical formulas and call sign designations are quite handy.

Perhaps most useful from an instructional standpoint is an illustrated glossary of technical terms, expanded to show the rudiments of facsimile, radioteletype, packet radio, antennas and much more. Very interesting little book.

(160 pages, 3-1/2" x 7", perfect bound hardcover; $17.95 from CRC Press, 2000 Corporate Blvd NW, Boca Raton, FL 33431)

To have your new product or book considered for review in Monitoring Times, send it to Editor, 140 Dog Branch Road, Brasstown, NC 28902.

Eavesdropping in America

by Theodore N. Swift

Interested in bugging? Most scanner enthusiasts are and, in this age of information gathering, a working knowledge of electronic surveillance and countermeasures can be very useful.

Ted Swift is an instructor of electronic countermeasures (ECM) at Texas A&M University as well as a professional in the field. His narrative tape is quite thorough in its assigned task to inform the listener of the various techniques -- as well as their limitations -- used to gather information surreptitiously.

The tape is not intended as a quickie course for wiretappers; rather, its intent is to inform the listener of the techniques which may be used against him -- body and room bugs, wiretaps, tracking transmitters, parabolic microphones, infrared transmitters, remote recording devices and more.

Industrial espionage is a profitable "research" tool used by many big businesses to gain a marketing advantage. Listening in on board-room conferences can provide considerable advantage to the adversarial company.

Have you heard any unusual clicks on your telephone lately? Have you seen any unusual vehicles parked in your neighborhood? Rather than becoming paranoid, it might not be a bad idea to learn how you might be bugged. Swift's tape teaches this very well.

(C-60, narrative; $14.95 plus $2 shipping from ACM Security, P.O. Box 4021, Gaithersburg, MD 20878; phone 301-977-4129)

mt

T.J. "Skip" Arey WB2GHA

P.O. Box 644
Waterford Works, NJ 08089

Hail to the Chief!

Very soon the people of the United States of America will choose their next president of the United States. This is a hallowed responsibility that really should require a great deal of thought and research. After all, once the die is cast "The Prez" is with us for a minimum of four years. He can lead for as long as eight years. Ever notice how some of these guys begin to wear on us after about the sixth year?

Get to the point, Skip!!

The point is that, when we pick a president (or even something less earth-shaking such as a car) we have to look at the long haul.

The same goes for picking the right receiver. Very few people are well heeled enough to buy a new radio every few months just to suit their latest listening habits. When you think of it, we probably keep our receivers about as long as we keep our presidents: Four years if they are okay and eight if we really like them. So it would seem that we would want to arm ourselves with the best information we can before shelling out our hard earned cash. After all have you ever tried to impeach a radio?

So, without further babbling... Drum roll please!!!

UNCLE SKIP'S GUIDE TO RECEIVER PURCHASING

Back in the "Good Old Days" you could pretty much count on the "Three S" method of picking radios. Sensitivity, selectivity, and stability were all you really had to go on. You looked for the best figures in these areas and then bought the most bang for your buck. Modern equipment throws us a few more curves but nothing you can't handle, Bunkey. Let's go through it by the numbers.

Sensitivity

Not to be confused with all that hugging in hot tubs that went on in the sixties, sensitivity is just a receiver's ability to hear weak signals. You will usually find this expressed in microvolts. This figure is referenced to 10 dB to account for atmospheric noise and noise generated within the receiver itself.

When you look at a radio's spec sheet you might see something like Sensitivity = S+N/N at 10 dB. Better receivers will have the sensitivity figures listed for the various bands and modes. If you get weak in the knees thinking about all that math and electronics, relax. Just compare the figures of the radios in your price range and look for the lowest number. An excellent figure would be less than 0.5 microvolts throughout the shortwave spectrum. Look for figures less than 1.0 microvolt for most VHF and UHF scanners.

Selectivity

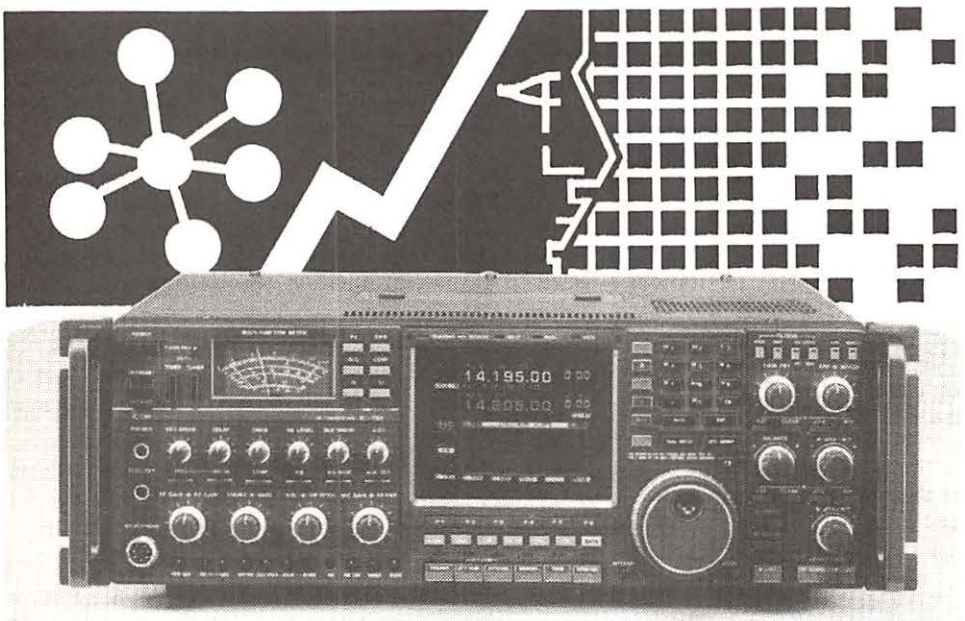
This is your how well your radio lets you hear what you want to hear while eliminating everything else that tries to get into your headphones. With this figure, you have to pay attention to what you are trying to hear to determine what bandwidth you will need. Let's take AM for instance. The radio in the kitchen that Mom uses to tune in her talk shows is probably set up for 8-10 kHz bandwidth -- fine for that purpose. However, to get any DXING done you are going to look for selectivity between 4-6 kHz bandwidth.

For SSB monitoring you need even more selectivity. So you need a figure of a bit less than 3 kHz. If you are going to go digging out CW signals on 40 meters on a Saturday night, you are going to want selectivity upwards of .5 kHz.

Serious code folks have 250 Hz (.25 kHz) filters in their receivers. But you couldn't understand the announcer on BBC with only 250 Hz of bandwidth so you will be looking for a receiver with several positions on the bandwidth dial.

This is where the buyer has to beware!!! Many higher priced radios only come with one or two filters installed, so if you need additional filters to suit your listening pleasure you are going to have to figure them into your price. Remember, high quality filters can sometimes cost about *one hundred dollars a pop.*

Selectivity figures are usually referenced to an *ultimate rejection* figure, most often -6 dB and -60 dB. The ratio between the bandwidth measured at -6 and -60 dB is known as the *shape factor.* A 1:1 ratio would be ideal but you are not likely to see it. (Not unlike the elusive 1:1 SWR ratio CBers are always dreaming of.) Look for



No one would decide to buy a piece of equipment as complex as this Icom IC-781 without doing a great deal of homework first.

the best ratio under 1:3 and you won't be far wrong.

Stability

We tend to be smug about stability in our solid state world. Older tube type equipment was prone to drift off frequency due to the heat generated within the receiver. Yet even high quality solid state equipment can exhibit drift of plus or minus 300 Hz during the first hour of operation. Not noticeable to all but the most exacting broadcast listener, but remember the CW operator with the 250 Hz filter? He would lose track of his entire signal.

Dynamic Range

This is a very practical point. Dynamic range is a radio's ability to hear weak signals in the presence of strong signals generated nearby. Poor dynamic range is generally the cause of overloading. The biggest problem with figuring out the dynamic range is that it can be computed several ways. Look for a *Blocking Dynamic Range* in the area of 100 dB if you can find it.

Readout

It is fairly simple to figure out that digital is better than analog readout. My only warning would be that, theoretically, you might find that a particular analog readout rig might have better performance figures than its digital counterpart in a particular price range. Those digital readouts do cost some portion of the overall manufacturing cost.

If you find this to be the case, remember that old timers got along just fine without digital readout for years. Having said that, most folks will probably opt for the convenience and accuracy that digital readout provides.

Accessories

If you have paid attention to all of the above you have narrowed the choices in your particular price range down to two or three receivers. Now you "count the buttons."

How many features does each receiver provide? Separate RF and AF gain controls are useful. Is there an AGC switch? How many bandwidth positions are provided? How about a notch filter? Is there a built-in attenuator? Is the headphone jack on the front, side or back? It never hurts to figure out if the knobs are arranged in a logical sequence. S-meters are a nice feature. Many modern rigs have a built-in clock.

Otherness

Once you have decided what to purchase you must then figure out where. You can find radios for monitoring almost anything in many discount electronics outlets these days. The problem is the guy trying to sell you the radio very seldom knows anything about it. A wise listener will choose to buy his or her equipment from a reputable and experienced monitoring source. The primary advantage lies in the level of technical expertise the hobby-specific sales operation can provide even an inexperienced listener.

It would be smart to shy away from the local discount store until you have exhausted the many fine purveyors of radio products you may find within the pages of *Monitoring Times*.

A Word About Used Gear

Old Uncle Skip is very partial to used equipment. You can get a lot of radio for your money by utilizing the used market. But you can also dredge up a lot of headaches. We will discuss used radios at length in future columns. However, my best advice to a person just starting out in the monitoring hobby is to stick with new or newer equipment until you have learned your way around. Very few "Hamfest Specials" come with a 90 day warranty against problems. Also, used gear often requires a great deal more care and feeding.

Finally, don't rush into things. The more effort you put out now the greater your enjoyment will be when you purchase your equipment.

Larry Magne has published extensive *RDI White Papers* on many currently popular receivers used by shortwave listeners. These are comprehensive laboratory examinations that leave little doubt as to quality of all the popular equipment out in radioland. A complete list of available papers can be had for an SASE to Publications Information, International Broadcasting Services Limited, Box 300, Penns Park, PA 18943 USA.

Of course, one of the most up to the minute resources for most radio information is *MT*. So stick around, pal. Knowledge is power!!!

mt

Dave Jones

430 Garnor Drive
Suffield, OH 44260

Davis-Monthan Air Force Base

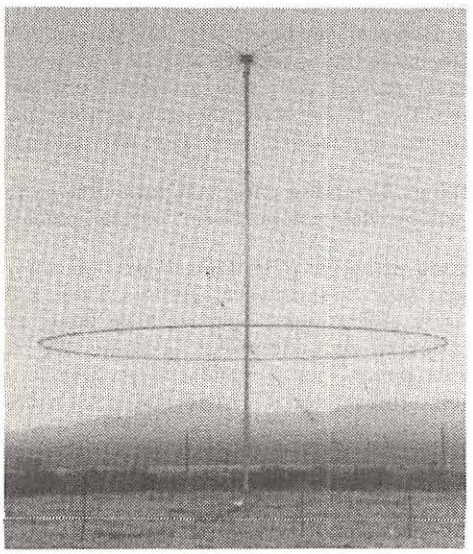
Davis-Monthan Air Force Base (DMAFB) has maintained a presence in southern Arizona since World War II. Back then, a trip to Tucson meant "taking a ride into town." In the intervening years, however, the city of Tucson has grown and its southeast border now reaches the edge of the base.

DMAFB is a TAC (Tactical Air Command) base with the primary operation of training Air Force pilots and maintenance of their Fairchild A-10 Thunderbolt aircraft. DMAFB also hosts the Aircraft Maintenance and Reservation Center (AMARC) 41st Electronic Combat Squadron (The only Department of Defense agency that has a positive cash flow!) and the U.S. Customs Service Aviation Branch. Up until the early 1980s, DMAFB was also host to Strategic Air Command Titan Missile operations.

DMAFB is home for the 836th AD (Air Division) and the 333rd, 357th and 358th TFTSs (Tactical Fighter Training Squadrons). Several other support organizations also reside on the base including an FAA installation.

Where to tune

Table 1 lists confirmed DMAFB non-aircraft frequencies with unconfirmed additional frequencies presented at the end of the table. The frequencies of 138.075, 138.165 and 138.175 have been previously confirmed as OSI (Office of Special Investigations) channels at other AF bases. Several of the 400 MHz frequencies listed as unconfirmed are links or fixed repeaters that were probably in use with the operation of the Titan silos for fixed communications between the silo and DMAFB. The silos were still in operation when the microfiche files were compiled and released by the government.



USAF Titan missile silo HF Christmas tree antenna

Also some of the VHF LB frequencies may have been associated with silo operations at the Little Rock AFB. Personnel utilized UHF frequencies for communications in and around the silos.

The identifiers utilized by the security police and law enforcement units are standard as with other USAF installations. The base police units were identified as "Police X" with the base station identifying as "Control." The security police used two tactical calls -- Alpha and Whiskey, with the base identifying as "Security Police" -- and perform their duties at all base gates as well as on the flight line and around the base perimeter.

The base police handle normal law enforcement functions such as radar traffic enforcement and the handling of domestic disturbances. The base police assist the security police at the main gates of the base at peak times with the checking of vehicle and/or personnel identification documentation.

The various aircraft (AC) maintenance nets handle the communications between flight line maintenance crews and their respective shops, or other flight line units or the tower. All vehicles that operate on the active flight line or runways must have the capability to communicate directly with the tower. The maintenance net on 148.475 appeared to be a catch-all as multiple users were monitored. "Lancer" AGE (Air Ground Equipment) units, flight line supervisors, Recovery Units (utilized during an air crash) and Navigation repair units were all monitored here.

Crash and Rescue

The crash and rescue frequency of 173.5875 was quite active considering the amount of training flights occurring. Whenever an aircraft has a problem in-flight, such as high engine oil temperature, an in-flight emergency is declared.

The aircraft declaring the emergency will usually transmit it on the command post or operations channel on UHF. The CP or operations will immediately notify the crash/rescue personnel who respond with the necessary equipment and personnel. Rescue and crash vehicles are usually positioned near the center of the runway on the flightline or taxiway. A unit or two may also set up at each end of the runway.

Approaching Craft

The aircraft on approach may be assigned a special frequency for approach control as was monitored on 359.300. When one A-10 on approach had to shut down an engine (A-10s have two), the pilot was told to switch from 318.100 to 359.300 -- the frequency on which the A-10 was guided in for a safe landing. The commander's net also becomes active whenever an in-flight emergency occurs, following the event from declaration until the time when the aircraft is cleared of the active runway.

Table 2 lists the confirmed aircraft frequencies utilized at DMAFB with additional unconfirmed frequencies at the end of the table. Military aircraft were monitored on all three of the major military frequency groups -- VHF LB, VHF and UHF 225-400. Since DMAFB is a training base, I expected a wide variety of communications in the various AF frequency operating ranges. The VHF LB NBFM (Narrow Band FM) frequencies were always monitored during air-to-air contacts while on training flights.

The frequency of 41.45 carried the "Fox" channel designator. The VHF 138 MHz frequencies were utilized by A-10s in the AM mode while on the flight line or taxiways, mainly with requests for departures and squawk codes. The A-10 command post for training operations is on 139.700 AM with both aircraft and ground units being heard. Air-to-air training communications were also monitored on 142.200 AM in addition to the VHF LB frequencies. A-10 tactical calls heard were "Phantom XX" and "Iron XX." The 41st ECS utilize modified C-130s that carry an EC-130 designator. The EC-130s utilize a tactical call of "Brady XX."

The UHF 225-400 monitoring yielded an interesting catch on 364.200. The frequency is listed as USAF at Mount Lemmon (refer to last issue's Federal File) for aircraft. Radio traffic was monitored that appeared to be between two base stations with transmissions that sounded like those heard on a command post channel. Several references were made to a "Whiskey Surveillance." All communications were in the AM mode.

Old Planes Never Die

The AMARC is quite interesting facility where the government stores military aircraft in the open desert. They come from all branches of the military as well as other government agencies like the U.S. Coast Guard. The aircraft generally are models that have been replaced by newer models or

TABLE 1

138.925	Digital data transmissions
139.650	DTMF (tones)
148.185	358th TFTS Maintenance Net, "Lobos"
148.300	355th CAM
148.450	AC Maintenance net
148.475	AC Maintenance net, multiple users
148.500	A-10 AC Maintenance
148.545	Input to commander's net
149.175	A-10 AC Maintenance, "Thunderbolt"
149.225	Refueling
149.550R	Commander's net output
150.325	AGE
163.000	Security police
163.5875	Civil engineers
164.9875	Base police
165.1625	AMARC yard operations
165.1875	AMARC Administrative and yard operations
173.4375	Taxi/motor pool (?)
173.5875	Fire/crash/rescue
407.350	Paging
407.425	User not identified

The following are unconfirmed frequencies for DMAFB that are listed in the government microfiche files formerly sold by Grove Enterprises.

30.55, 32.45, 36.15, 36.50, 38.30, 41.90, 138.075, 138.165, 138.175, 138.625 (AM and FM, 140.400, 141.575, 141.625, 141.750, 141.900, 141.925, 142.575, 143.425, 143.760, 143.800 (AM), 143.880, 143.925, 148.065, 148.095, 148.245, 148.455, 148.515, 148.550, 149.150, 149.250, 149.310, 149.535, 150.150, 150.350, 163.4875, 407.375, 407.400, 407.450, 407.475, 413.000, 413.050, 413.125, 413.175, 413.200, 413.300 and 413.375.

upgrades. Once delivered to the desert, the aircraft are prepared for storage by covering the cockpits and other openings with a material to reflect the heat.

AMARC is analogous to an automotive junk yard -- when a part is needed to keep an existing aircraft flight ready, the part is removed from a plane in storage. Also many of the aircraft at AMARC can be rejuvenated and made ready to fly again in case of war or an emergency. AMARC operations can be monitored on 165.1625 and 165.1875.

Cold War Museum

Southern Arizona is also the home of the Pima Air Museum and the Green Valley Titan Missile Museum. Each is an interesting and informative stop for the military/scanner enthusiast.

The Titan Missile Museum is one of a kind -- all other of the 54 Titan sites have been dismantled and destroyed. An actual HF "Christmas Tree" antenna is still at the Titan silo site which is set up as it was when operational. The area around the antenna was fenced off with high level RF warning signs posted. Each morning the areas had to be cleared of animals that wandered into it during the previous day lest they be fried by the high-powered radio signals.

The Pima Air Museum (Tucson) has on loan a variety of aircraft from AMARC including the presidential aircraft utilized by Presidents Kennedy and Johnson. A four engine Douglas VC-118A "Liftmaster" that was used to get Presidents Kennedy and Johnson to the base (they were unable to accommodate the larger Boeing 707s), are on display. The President's cabin had a Hallicrafters all band radio mounted directly next to the Chief Executive's chair and desk. The press section of the aircraft utilized a Hallicrafters "Sky Champion" HF transceiver for communications with ground stations.

The next Federal File column will discuss GWEN (Ground Wave Emergency Network) and the following column will present a highlight of military UHF aircraft communications from the northern east coast.

mt

TABLE 2

A-10s:

Training operations-NBFM	34.55, 34.60, 34.95, 36.45, 36.00, 40.80 and 41.45.
Training operations-AM	138.050, 138.100, 138.200, 138.250, 138.300, 138.500, 139.700 and 142.200.
Helicopter operations-NBFM	32.85 (air-to-air) and 34.60

UHF AC:

239.800	FAA FAC
253.500	Approach/departure (AD)
270.100	ATIS "X-Ray"
271.300	Final approach
275.800	Tower/dispatch-squak assignments
276.600	AC/Land base station, A-10 operations
283.700	AZ ANG AC to dispatch
286.200	AC
292.500	AC
294.700	FAA Tucson FAC
297.200	ATC during training exercises
318.100	Final approach
320.100	Tucson ATIS
339.100	AD
341.500	A-10 AC-to-AC during range operations
351.400	AC
359.300	FAA Used on emergency approaches
361.500	AC/Land base station. 358th TFTS operations
364.200	Unidentified-refer to text
372.200	Dispatch, pilot/tower
379.400	AC
390.800	FAA Tucson final approach
393.000	FAA A/D

Unconfirmed DMAFB UHF AC frequencies: 259.400, 266.200, 268.100, 271.900, 286.400, 289.300, 308.800, 314.300, 321.200, 347.200, 358.200, 361.600, and 381.300.

Jean Baker, KIN9DD
213 W. Troy Ave. 4C
Indianapolis, IN 46228

Answering the Mail

In this month's column we'll answer the most frequently asked questions from readers.

SELCALS

Jim C. recently asked us to include some information about SELCALS, to which he hears constant reference while monitoring the VHF and HF aero bands.

When aeronautical enroute ground stations need to contact a flight, they utilize a system known as "Selective Calling" -- better known as SELCAL. Here's how it works:

Each aircraft which is SELCAL equipped has a primary and a backup receiving unit. Every unit is supposed to have its own four-letter code by which a ground station operator can signal the flight deck crew that someone wants to contact them. As one wag described it, "It's like telling a pilot to pick up the phone!"

When the operator activates a particular aircraft's SELCAL code, an audible signal (a chime) is received on the flight deck, and a light flashes on a receiving panel. Airline company stations, aeronautical enroute ground stations, and others with the proper transmitting equipment can contact aircraft who have SELCAL receivers on both HF and VHF. However, Air Traffic Control facilities -- as we know them here in the United States -- do not contact aircraft by SELCALLing them.

The portion of the VHF aero band where you can hear flights being SELCALLed is where the company stations and aero enroute stations are allocated frequencies -- 128.825-132.000 MHz. On HF, you can monitor ground stations SELCALLing flights on all of the civilian international aero communications bands. Most airlines not in countries under communist control use SELCAL.

Although each SELCAL airborne unit is purported to have its own SELCAL code which is unique to that particular unit, occasionally it happens that two aircraft will have the same SELCAL code. Then the confusion begins!

Very frequently, you'll hear a pilot asking a ground station operator for a SELCAL check when he gives a position report. The International Phonetic Alphabet is used to spell out each letter in a SELCAL code. For instance, a SELCAL code could be made up of the letters H M K W.

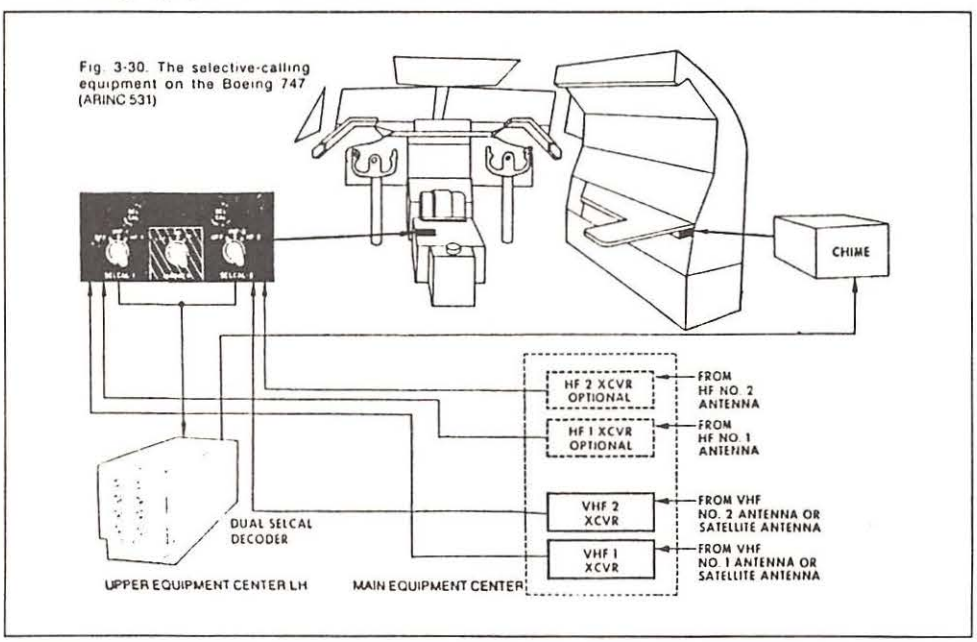
In that case, the pilot would request that the ground station operator would give him a SELCAL check on "Hotel, Mike, Kilo, Whiskey. Below in Table 1, the complete International Phonetic Alphabet is spelled out. Also, see the diagram of a SELCAL unit aboard a 747.

One of the advantages of SELCAL units is that if an aircraft is equipped with a receiving unit, the pilots don't have to wear their headsets throughout a flight in case a station on the ground is trying to contact them by voice. Those headsets can get quite cumbersome during a transoceanic flight of six hours or more!

The International Phonetic Alphabet is used to avoid confusion and misunder-

The International Phonetic Alphabet

A -	ALFA (Al-fa)	Q -	QUEBEC (Keh-beck)
B -	BRAVO (Bra-vo)	R -	ROMEO (Row-me-oh)
C -	Charlie (Char-lie)	S -	SIERRA (See-air-ah)
D -	DELTA (Del-tah)	T -	TANGO (Tang-go)
E -	ECHO (Eck-oh)	U -	UNIFORM (You-nee-form, or Oo-nee-form)
F -	FOXTROT (Foks-trot)	V -	VICTOR (Vick-tah)
G -	GOLF (Golf)	W -	WHISKEY (Wiss-key)
H -	HOTEL (Hoh-tell)	X -	X-RAY (Ecks-ray)
I -	INDIA (In-dee-ah)	Y -	YANKEE (Yang-key)
J -	JULIET (Joo-lee-ett)	Z -	ZULU (Zoo-loo)
K -	KILO (Kee-low)		
L -	LIMA (Lee-mah)		
M -	MIKE (Mike)	Numbers one through zero:	
N -	NOVEMBER (No-vem-ber)	1 - ONE (Wun)	6 - SIX (Six)
O -	OSCAR (Oss-cah)	2 - TWO (Too)	7 - SEVEN (Sev-en)
P -	PAPA (Pah-pah)	3 - THREE (Tree)	8 - EIGHT (Ait)
		4 - FOUR (Fow-er)	9 - NINE (Nin-er)
		5 - FIVE (Fife)	0 - ZERO (Zee-row)



SELCAL Equipment on a Boeing 747

The SELCAL "chime" unit is located on the flight engineer's desk panel. The SELCAL receiving equipment itself is located beween the captain and the first officer's seats with other radio gear.

standing in aviation, military, amateur radio, and others who use radio transmissions on a regular basis. Although English is the international language of aviation, the way it is spoken -- plus the many and varied accents of the international aviation community -- makes spoken English difficult to understand by everyone involved without a uniform method of pronunciation. This is why the International Phonetic Alphabet is utilized.

Rainbow Radio

By popular demand, we're again repeating the address of Rainbow Radio for those of you who want to send in reception reports of their transmissions.

RAINBOW RADIO
Polestar Communications, Ltd.
Post Office Box 2280
Morinville, Alberta
TOG 1PO
Canada

For those of you who are unfamiliar with Rainbow Radio, they are an LDOC (Long Distance Operational Control) aero enroute ground station. Working mostly with Canadian Airlines and charter outfits, they receive departure reports on fueling, passenger counts, maintenance status, and other data from pilots to be passed on to their company bases, set up phone patches, and handle other types of ground/air/ground transmissions.

If you're sending a reception report to Rainbow Radio -- or any other station in hopes of receiving a QSL, please remember to send return postage. Make it in the form of an International Reply Coupon if it is to a station outside of the country in which you live; or, you can purchase mint stamps for just about any country from a dealer.

If your report is going to a domestic station, it is still a wise move to include return postage. Many station managers are not familiar with reception reports and are inclined to throw them away. However, the inclusion of return postage will motivate them to at least make a stab at sending a verification letter back to you.

Speaking of reception reports and QSLs: Many newcomers to our hobby -- especially those who also have an interest in shortwave broadcast monitoring or amateur radio -- are surprised to find out that it's very possible to obtain verification letters and QSL cards as a result of monitoring the aero bands. However, there are some differences that are worth talking about here in regard to sending reception reports to aero comms facilities as opposed to sending them to shortwave broadcast stations.

In the next installment of "Plane Talk," we'll look at how to send reception reports to aero communication stations -- both ground and airborne -- which can result in QSL cards from the recipient.

Oceanic Reporting Points

Robert Lawrence, Dean W., and Henry Burk have asked "Plane Talk" about the reporting points over the Atlantic which they've heard pilots mention when they give position reports to ground station operators.

The reporting points with names (i.e. ROLEY, SMELT, TARGA, etc.) are usually those close to land masses; further out over the ocean, reporting points are given as coordinates (latitude/longtitude) and not ordinarily given names.

Here are some of the reporting points which you may hear when pilots give their positions over North Atlantic/Caribbean routes. Remember that these are close to various land masses:

BACUS:	34°26N/73°51W
BOURS:	24°59N/71°18W
CHAMP:	37°31N/71°41W
CORAN:	32°01N/73°36W
DANER:	35°16N/69°04W
DEENO:	20°31N/67°28W
ELBOW:	26°25N/76°43W
ELKAS:	27°28N/73°19W
FLANN:	38°20N/69°57W
KRAFT:	23°30N/67°43W
LEARS:	28°30N/71°27W
TOOMS:	23°00N/69°45W

Cambridge Airadio (Box 3154, Silver Spring, MD 20901) has some excellent route charts available for a very nominal charge, with which you can follow flights across both the Atlantic and the North Pacific. These charts show reporting point names and coordinates as well.

This writer has spent many interesting hours following flights from departure point to their destinations with these charts. Once you become accustomed to using them (and they're really self-explanatory), you'll wonder how you monitored international flights without them!

MT Reader On-Deck

MT reader, Bill Wolf (KA2EEV) took a well-earned vacation to St. Petersburg, Florida. When he and his wife boarded their flight at Newark International, he asked one of the flight attendants if the crew would object to his taking pictures of the flight deck. He reports that the next thing he knew, he was beckoned right in by the captain, who not only allowed him to take pictures, but in turn, snapped one of Bill seated right in his (the captain's) chair!

Here's the proof of his adventure (below). As Bill said in his letter, "This is really a fabulous way for an aero communications buff to kick off a vacation!"

That's all for this time. Remember, in the next installment, we'll discuss reception reports and QSLs. 73 and out.

mt

Bill Wolf, KA2EEV, tries out the captain's seat in a Boeing 727 (Photo courtesy Bill Wolf)

Ike Kerschner, N3IK

R.D. 1, Box 181-A
Kunkletown, PA 18058

The President

No, we are not talking about the ruckus going on in the political arena! In this case "The President" is a new ham transceiver from (of all folks) *Uniden*. In fact, you may have noticed an advertisement for this 10 meter rig called, "The President HR2510".

The ad -- run by a firm called Communication Electronics, reads: "10 Meter Mobile Transceiver - Digital VFO - Full Band Coverage - All Mode Operation - Backlit liquid crystal display - Auto Squelch - RIT - Preprogrammed 10 kHz. Channels - 25 watts output." Extra intriguing was the price of $239.95. It was too much for me to resist. Off went my check and before long I had this dandy little rig delivered to the door (photo 1).

After a quick look at the instruction manual, "The President" was connected to the shack 12 volt supply and 3 element yagi. When the unit was turned on the LCD lit up and noise filled the room -- enough audio (4 watts) to satisfy even my old tin ears.

I scanned up and down the band using the scan buttons on the mike. Scan steps are in 10 kHz increments which I consider too large, but you can get an idea of band activity. There is a span control that allows you to change the VFO tuning increments from 10 kHz to 1 kHz or 100 Hz; however there is no way to make the unit scan in other than 10 kHz steps.

When in the scan mode the frequency range is divided into four bands, 28 to 28.49, 28.5 to 28.99, 29 to 29.49 and 29.5 to 29.7. To go from one band to another in the scan mode you must hit the band switch to advance to the next range. When using the VFO the range is 28 to 29.7 continuous.

The left side of the liquid crystal display has a portion marked meter. This is a bar graph type of meter. Its functions are controlled by a button on the front panel. Push the button and the meter will cycle through power out, modulation, signal strength and SWR modes. It's an excellent feature and it's easy to operate and read.

Also on the front panel are controls for mode, frequency lock, squelch, RIT (receiver incremental tuning), RF gain, mike gain, noise blanker, dim switch (which reduces the brightness of the crystal display), a band switch (4 bands from 28,000 to 29,970, VFO knob, on/off volume, Beep (turns on courtesy beep) and a PA switch that turns rig into public address system.

On the rear panel you'll find an SO-239 for antenna connection, a power connector and the accessory connector. The key, external speaker and PA speaker are connected at the accessory socket.

SSB and CW signals are easy to copy and several QSO's on SSB were made in short order. Within the week, this little rig had produced SSB and FM QSO's throughout North and South America. CW is a blast with this little rig, too, and one afternoon I heard several loud CW sigs and proceeded to work three ZL stations in a row as well as PY, CX, LU and OA.

EXCELLENT CONSTRUCTION

The next step was to remove the rig from its cabinet and take a close look at the internals (see photo 2 & 3). Uniden did an excellent job constructing this rig. The neat layout and high quality assembly is very impressive. The mechanical construction is quite solid and should stand up well in a mobile environment.

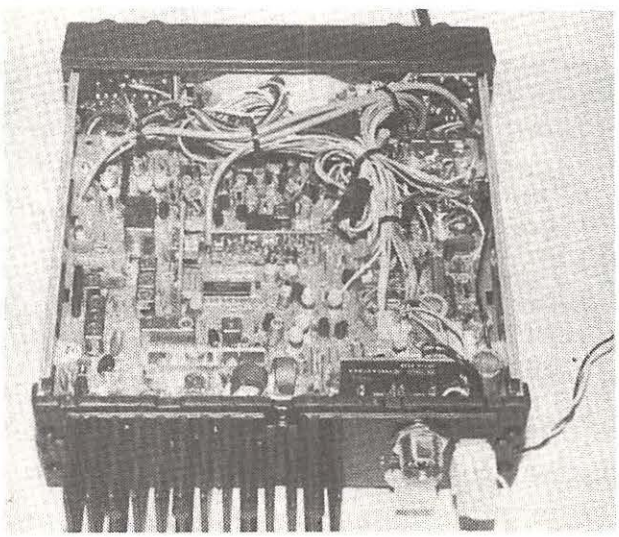
Uniden claims 25 watt CW output, the Bird Watt meter read 28 watts at 28.5 MHz into a 50 ohm dummy load on CW. AM gave us a tad over 12 watts (manual states 10) and FM produced the same 12+ watts at 29.6 MHz.

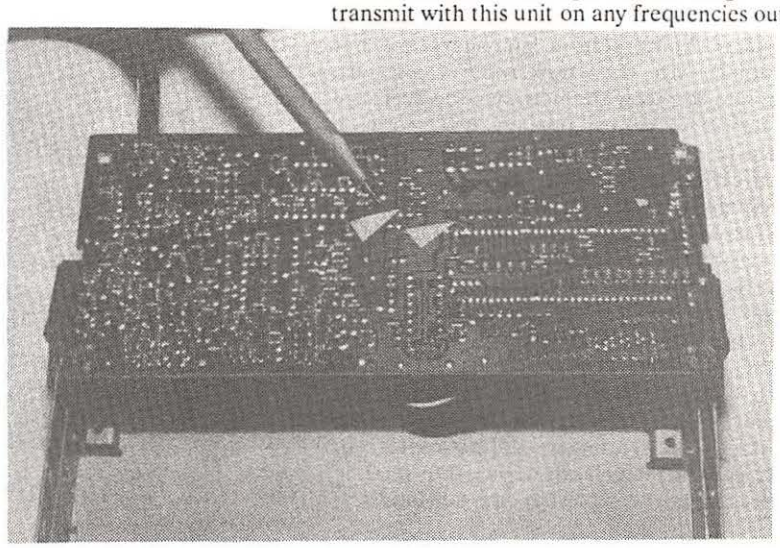
Claimed sensitivity is .25 microvolts for a 10 dB S/N and test results showed the unit to be right on the money -- a .1 microvolt signal produced a very readable signal. Switching to FM mode we found a somewhat different story with the unit requiring about .7 microvolts (claimed sensitivity is .5 microvolts) to achieve a 20 dB S/N.

As with most rigs of this type "The President" is capable of expanded frequency coverage. It is a simple matter to expand the range from 26 to 29,999. To do so simply lift pins 34 and 35 of the microprocessor above ground and connect to +5 volts through a 10 k resistor.

Take a look at photo three; You will see two white arrows, the one on the left indicates the common tie point of pins 34 and 35 (to ground). Use an xacto knife to cut the copper foil at this point and solder a 10k resistor from this point (the side with pins 34 and 35) to the positive side of the five volt regulator (white arrow on right in photo 3). Now the rig covers everything between 26 and 29.999 MHz.

Remember though, it is illegal to transmit with this unit on any frequencies out-





side of the ten meter amateur band!

The instruction manual included with this unit is very good, easy to read and understand. Even a new novice won't have trouble getting this unit on the air in short order.

Also in the package with "The President" is a mobile mount and all the required hardware to put the unit in your car, boat or plane (What, you don't have a plane?). What a deal!

Do I like "The President"? You bet! The only features I would like to see on this rig would be a repeater off-set to enable repeater operation on FM. And it would be nice if the CW switch-over speed were faster than one second. One modification I made to mine was to fill the indicator spots on the knobs with white plastic model paint; because I found it difficult to see what position they were at even in normal room light.

At $239.95 this little rig is one big bargain! It's available from Communications Electronics at 1-800-USA-SCAN.

220 MHz

On August 4, 1988 the FCC announced reallocation of the 220 to 222 MHz. portion of the amateur band to the Land Mobile service. In spite of strong opposition by the American Radio Relay League (ARRL), other amateur groups and the U.S. Congress, the FCC deemed the move to be in the public interest.

The ARRL continues to oppose the reallocation and will pursue all available means to reverse the action.

Too often we amateurs are complacent with our lot and fail to realize the importance of such actions. Even if we do not use 220 we are still affected by this decision. Such moves, when successful, set us up for further cuts on other bands in the future.

With the advent of Novice enhancement more and more people are entering the hobby each month. This growth in numbers will place increasing demand on existing frequencies. Already many areas of the country have used all the available repeater pairs on 2 meters. How long will it be until we need those reallocated 2 MHz?

OSCAR 13

OSCAR 13 went into operation this summer and although some minor problems to exist -- notably in mode L -- overall things are going well. AMSTAT-DL (Germany) revised uplink power requirements by 3.8 dB (28.8 dBW or 757 W EIRP). However observers in the U.S. report a 10 dB performance deficit. Tests made in the U.S. indicate the uplink requirement to be 38 dBW which turns out to be 9.2 dB poorer than even the revised DL Mode specs.

In spite of the reported Mode L problem amateurs have been using AO 13 with excellent results on all available modes.

Amateur Credit Cards?

The ARRL Board of Directors endorsed an affinity credit card program. The card will be made available to interested League members, half of the derived funds will be allocated to a fund for the defense of amateur frequencies (good idea?).

Ex-W3UQW

Lawrence Kaczmarczyk of Mahanoy City, Pennsylvania, has had his 1986 application for Advanced Class license designated for hearing. Kaczmarczyk surrendered his ham ticket in 1985 after the FCC started license revocation proceedings against him for intentional jamming, transmission of music, broadcasting and unidentified communications.

In a plea bargain arrangement, the FCC agreed to accept an application from him in one year for routine relicensing providing there were no violations in the interim. However, three months later the FCC said he was monitored on three different occasions again intentionally causing harmful interference to radio communications. A hearing has been scheduled to determine whether the applicant is qualified to become an amateur service licensee (via *W5YI Report*).

Theory for the Visually Impaired

The Gordon West Radio School has recently introduced a code and Novice voice class theory course specifically for the visually impaired beginner. Two stereo, long-play, audio cassettes train the visually impaired to pass the Novice entry-level code examination. The tapes contain all letters, numbers, punctuation marks and procedural signals and a sample CW exam to prepare the applicant.

The 302 Novice class test questions are also covered in detail on two additional cassette tapes. Every question is discussed with easy-to-remember comments about the questions plus a thorough understanding of the correct answer. Incorrect answers are also reviewed so the applicant better understands what the 30 question exam will be like.

The tapes also contain instructions to the volunteer examiners that will administer the test.

Cassette theory courses are available for the following upgrades:

Technician - Element 3A
General - Element 3B
Advanced - Element 4A
Extra - Element 4B

Each course is $19.95. For more information write Gordon West Radio School, 2414 College Drive, Costa Mesa, CA 92629 or phone (714)549-5000.

Improving Your Code Speed

About a year ago this column featured my favored technique for learning Morse code. Since then, many of you have written to comment about your success at learning the code and passing the exam. However a fairly large number of folks seem to have trouble getting past ten words per minute or so. There is a way around this problem if you are willing to make the effort.

Almost all of us who want to improve our code speed hit a plateau. We sit in front of the receiver copying W1AW nightly but get almost nothing above 10 wpm, never mind trying 13 or 15! Now here is the secret.

Stop copying the 5 and 10 wpm practice sessions. Copy only the 15, 20 and 25 (and yes 30 and 35) wpm practice runs even though copy is only five or ten percent. It really works. After just a few sessions of this you will find the 15 wpm run to be a snap. Try it, for the next two weeks. Do not try to copy anything below 15 wpm. Don't even listen to the slower speeds. It works! When you get that upgrade write, and tell me how well it worked for you.

Jamboree on the Air

October 15 and 16 will see thousands of Boy Scouts on the air during their annual "Jamboree on the Air". You can participate by inviting your local troop or cub pack to your station to talk with the many Scouting stations that will be active.

Thousands of stations from all over the world will be active during this weekend and youngsters the earth over will have an opportunity to talk to one another and exchange ideas. Why don't you lend a hand?

Frequencies are CW - 3590, 7030, 14070, 21140 and 28190; -Phone- 3940, 7290, 14290, 21360 and 28350. Packet, RTTY, SSTV and ATV operation is also planned.

73 de N3IK

mt

the qsl report

Gayle Van Horn

60 Lester Drive
Orange Park, FL 32073

Anguilla:
The Caribbean Beacon-AM-1610 kHz. Full data color studio card. Verification signer, Gareth Hodge-Manager. Received in 90 days for one IRC, and an English reception report. Station address: P.O. Boc 690, Anguilla, British West Indies.

Belize:
Radio Belize, 3285 kHz. Large full data Belize map card. Verification signer, Chief Broadcasting Officer. Received in 30 days for one IRC and an English reception report. Station address: P.O. Box 89, Belize City, Belize, C.A. (Rod Pearson, St. Augustine, FL)

Bolivia:
Radio Panamericana, 6105 kHz. Full data South American map card and personal letter from verification signer, Daniel Sanchez Rocha-Sub. Director. Received in 20 days for mint stamps, one U.S. dollar, and a Spanish reception report. Station address: Cajon 5263, La Paz. Bolivia. (Tom Sullivan, New Orleans, LA)

Canada:
CBHT-TV-Channel 3. Full data station card, CBC emblem sticker, and prepared letter. Verification signer, B. Vandervoart-Secretary. Received in 7 days for an English reception report. Station address: P.O. Box 3000, Halifax, Nova Scotia, B3J-3E9, Canada. (Larry Van Horn, Orange Park, FL)

Canada:
Radio Canada International, 9755 kHz. Full data "Anniversary" card, and station program schedule. Received in 14 days for an English reception report. Station address: P.O. Box 6000, Montreal, Canada H3C 3A8 (Bill Traister, Covington, TN)

Cuba:
Radio Rebelde, 5025 kHz. Full data QSL on station letterhead, pennant, and sticker. Verification signer, Jorge Luis Mas Zabala. Received in 85 days for a Spanish reception report. Station address: Apartado 6277, La Habana 6 Cuba. (Joseph A. Johnson, Savannah, GA)

Denmark:
Radio Denmark, 15165 kHz. Full data art card. Verification signer, Beude Baug. Received in 60 days for one IRC and an English reception report. Station address: Shortwave-Dept., Radiohouse, DK-1999, Frederiksberg, Denmark. (ed.)

Egypt:
Radio Cairo, 9475 kHz. Full data Egyptian "Mosque" postcard, without verification signer. Received in 52 days for one IRC and an English reception report. Station address: P.O. Box 1186, Cairo, Egypt. (Bill Traister, Covington, TN)

Gabon:
Swill Radio International relay, 9810 kHz. Full data "SRI" studio card, without verification signer. Received in 130 days for an English reception report. Station address: Giacomettistr 1, 3000 Bern 15, Switzerland, (Tom Sullivan, New Orleans, LA)

Marshall Islands:
WSZO, 4940 kHz. Full data QSL on station letterhead. Verification signer, Peter Boon-Manager. Received in eight months for a English reception report. Station Address: Dept. of Interior and Outer Island Affairs, Majuro, Marshall Islands. (Douglas S. Waller, Bay Village, OH)

Mexico:
Radio Educacion, 6185 kHz. Partial data QSL on station letterhead, and studio photo. Verification signer, Gustavo Carreno L., Sub. Director Tecnico. Received in 46 days via registered mail for mint stamps, and a Spanish reception report. Station address: Angel Urraza 622, Col. del Valle, C.P.O. 3100, Mexico, Distrito Federal. (Rod Pearson, St. Augustine, FL)

Mozambique:
Radio Mozambique, 3210 kHz. Full data world map card, without verification signer. Received in 25 days for mint stamps, and a Portuguese reception report.Station address: Caixa Postal 594, Maputo, Mozambique. (Bill Traister, Covington, TN)

New Zealand:
Radio New Zealand International, 15150 kHz. Full data scenery postcard, blue station pennant, and program schedule. Verification signer, Rudi Hill. Received in 30 days for three IRCs, and an English reception report. Station address: P.O. Box 2092, Wellington, New Zealand. (Tom Sullivan, New Orleans, LA)

Norway:
Radio Norway, 15310 kHz. Full data "Wooden Church" card, station sticker, and program schedule, without verification signer. Received in 30 days for an English reception report. Station address: N-0340, Oslo 3, Norway. (Joseph A. Johnson, Savannah, GA)

Papua New Guinea:
(Bouganville Province) Radio North Solomons, 3325 kHz. Full data QSL on "NBC" station letterhead. Verification signer, C. Talei. Received in 89 days for mint stamps, and an English reception report. Station address: P.O. Box 140, Kavieng, New Ireland Province, Papua New Guinea. (Rod Pearson, St. Augustine, FL)

Paraguay:
Radio Nacional, 9735 kHz. Partial data QSL on station letterhead, and travel brochure. Verification signer, Carlos Montaner, Jefe Tecnico. Received in 123 days for mint stamps, and a Spanish reception kreport. Station address: Oliva y Alberdi 6 to piso, M.O.P.C., Asuncion, Paraguay. (Bill Traister, Covington, TN)

Pirate:
Radio Garbanzo, 7415 kHz. Full data station letter and note from verification signer, Fearless Fred-Program Director. Received in 45 days for mint stamps, and an English reception report. Station address: 5074 Hilo, Hawaii, 96720. (Steven J. Rogovich, Virginia Beach, VA)

Puerto Rico:
NMR-U.S. Coast Guard Radio Station-San Juan. Full data letter with gold Coast Guard seal. Verification signer, Raymond Gypp-Master Chief Radioman, Executive Officer. Received in 14 days for U.S. mint stamps (returned with reply), and an English reception report. Station address: P.O. Box S-2029, San Juan, Puerto Rico, 00903. (Larry Van Horn, Orange Park, FL)

RMS-Queen Elizabeth II:
GBTT. Full data prepared card, color postcard of the "QEII" and a peronal letter from verification signer, Phil E. Williams-Radio Officer. Received in 30 days for one IRC and an English reception report. Station address: RMS-Queen Elizabeth II, Attn: Chief Radio Operator, c/o Cunard/NAC Lines, 555 Fifth Ave., New York, N.Y. 10017. (Larry Van Horn, Orange Park, FL)

Seychelles:
Far East Broadcasting Assoc, (FEBA), 11870 kHz. Partial data yellow map card. Verification signer, Pearl Metcalfe-QSL Secretary, Received in 95 days for two IRCs and an English reception report. Station address: Box 321, Union Vale, Victoria, Mahe, Seychelles, Africa. (Tom Sullivan, New Orleans, LA)

South Africa:
South African Airways LDOC. Partial data QSL on airline letterhead. Verification signer C.H.Z. Booysen-Asst. Manager Flight Control Communications. Recived in 60 days for an English reception report. Station address: Office of the Chief Director (Flight Operations), South African Airways, P.O. Jan Smuts Airport, 1627 Johannesburg, Rep. of South Africa. (William Jarrett, Knoxville, TN)

Spanish Morocco:
Radio Medi Un, 9575 kHz. Full data station card with schedule, and sticker, without verification signer. Received in 152 days for one IRC and a French reception report. Station address: Boite Postal 2055, Tanger, Morocco. (Greg Humphries, Long Beach, CA)

Sweden:
Radio Sweden International, 9645 kHz. Full data "Anniversary" card, without verification signer. Received in 18 days for an English reception report. Station address: S-105 10 Stockholm, Sweden, (ed.)

Tanzania:
Radio Tanzania, 9685 kHz. Full data yellow and blue African map card. Verification signer, Director of Broadcasting. Received in 45 days for two IRCs, and an English reception report. Station address: P.O. Box 9191, Dar Es Salaam, Tanzania. (ed.)

United Arab Emirates:
(Abu Dhabi) Voice of the UAE, 11865 kHz. Full data color scenery folder card and program schedule. Verification signer, Station Director. Received in 30 days for two IRCs and an English reception report. Station address: P.O. Box 63, Abu Dhabi, United Arab Emirates. (Rod Pearson, St. Augustine, FL)

USSR:
(Ukraine SSR) Radio Moscow, 7180 kHz via Simferopol site. Full data postcard of Lenin Library, without verification signer. Received in 40 days for an English reception report. (Greg Humphries, Long Beach, CA)

Vanuatu:
Radio Vanuatu, 7260 kHz. Full data "Slit Gong" card, without verification signer. Received in 29 days after mint stamps, and two French follow-up reception reports. Total time report outstanding was eighteen months. Station address: P.O. Box 49, Port Vila, Republic of Vanautu. (Rod Pearson, St. Augustine, FL)

Venezuela:
Radio Rumbos, 9660 kHz. Full data color scenery postcard, without verification signer. Received in 72 days after mint stamps, and a Spanish reception report. Station address: Apartado 2618, Caracus 1010A, Venezuela. (Bill Traister, Covington, TN)

Jack Albert

203 York Place
New Lenox, IL 60451

Something Strange, Book 2

Last month I posted a query about a strange signal that I copied on 5.049 MHz. These signals were also heard on 7.8233 MHz at 0615 UTC and 14.5937 MHz at 0220 UTC. Each consisted of eight musical tones. Two of the tones are VNFSK (Very Narrow Shift Keying) with a 20 Hz shift and are situated about 1 kHz lower in frequency. It appears to be a synchronous clock that changes every 50 milliseconds (10 Hz). I believe the six higher tones are parallel data.

As I mentioned before, this may be the new Mark VI Piccalo system which is described in the *Radio Teletype Code Book* by Joerg Klingenfuss. If anyone has information on these strange tones, please drop me a line. My address is 203 York Place, New Lenox, Illinois 60451. If you hear something strange on the bands, let me know and I'll publish your findings so someone can identify it.

FAX Facts

The popular trend in "Radio Modem" technology is the introduction of the "all mode" unit. AEA introduced the PK-232 a few years ago and last year they added the facsimile mode. If you already own a PK-232 without FAX, AEA offers an upgrade package. Three other manufacturers of RTTY gear introduced an all mode TNC which can receive facsimile. The Kantronics KAM, KPC-4, KPC-2, KPC-2400 and the KPC-1 all have the ability to copy WEFAX pictures.

If you own any of the above units, you can have them up-graded at a nominal cost ($19.95 to $29.95). They also have a computer program available called "MAXFAX" which I believe is PC compatible only. This allows the PC user to display the pictures on the screen or print it out. Contact Kantronics for details on which computers or what printers can be used.

MFJ also boasts that their new "MULTI MODE" unit can copy FAX as well as SSTV (Slow Scan TV). SSTV is very similar to FAX and is used by Ham Radio Operators for sending video pictures on the LF and HF bands. For more information, contact the manufacturer for a free catalog. One last piece of new equipment is the M7000, recently introduced by Universal SW.

What the FEC is SITOR?

In previous issues of *Monitoring Times*, I mentioned that there are other forms of RTTY. These are SITOR, FEC and TDM, to name a few, and are all spin-offs of the standard Baudot RTTY. FEC (Forward Error Correction) is actually a form of SITOR and is used for sending bulletins or an "All Call" mode. Hams, for example, use FEC to establish a contact and then they switch to SITOR which is characterized by the chirp-chirp-chirp sound.

SITOR is also used by ships at sea because of an error correction scheme that is built into the SITOR signal that can provide error-free communication. There is also a SITOR mode L or "Listen" mode. Mode L allows other receiving stations to eavesdrop on the sender. This is the mode that you will use.

Here's how the SITOR works. Let's say we're talking on a CB radio and I tell you something. You can't copy very well so you say "what" or "say again." Then I repeat what I said. If you don't copy a second time, you'll have to say "what" again and I'll have to repeat it. This will go on over and over again until you can copy every word correctly. SITOR works in the same fashion.

The first chirp sound comes from the sender (me). If the receiver (you) copies the data correctly, he chirps back (in computer talk) an "OK". But if the copy is poor, the receiver can detect a bad character because of the special built-in error detection error scheme. Then the receiver chirps back "what" and the sender repeats the data.

When you encounter a SITOR signal, you will hear what sounds like two chirping birds. This is the sound of the two stations transmitting back and forth, exchanging data and acknowledging, or ARQs (another way of saying what). Sometimes the other station can't be heard because of propagation. Then you will hear a chirp, a pause and then another chirp.

You can copy SITOR on the marine bands at 6.5, 8.7 and 13.1 MHz. The AEA PK-232 can "auto set" itself to copy SITOR using the "signal" command. If you are using a software package (with the Commodore 64 computer) like "Hamtext" or "SWL Text," you'll have to use Mode "L" and tune in the signal as if it were RTTY.

FEC sounds a lot like RTTY with one exception. The data appears to be a constant stream of characters with no breaks or pauses (that is, the beeping sound is continuous). RTTY, on the other hand, can have periods whereby only one tone is sent for a few seconds. FEC can also be heard on the marine bands and is used for sending weather information and news bulletins to ships at sea.

Figure 1 is a print-out I copied several months ago. I'm telling you, RTTY becomes an exciting hobby when you snag one like this! We'll see ya next month! ZCZC

mt

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TAMPA II
SAG1-88-9127: CCX GFAN-88-9351)
LAW ENFORCEMENT SUSPECT VSL LOOKOUT ON VSL TONYA
 A. EPIC L/O CG88-1246 KNOTAL)
B. TECS B87023456345MC (NOTAL)
QM ON 041288 DEA S/A WIDENER, MIAMI FD, REQUESTED A 90 DAY,
CATEGORY 2 SUSPECT VESSEL LOOKOUT ON:
SUBJ DESCRP: TONYA     SUBJ TYPE:B  TECS
TECS 88 - VESSEL ENTRY:
ARMED AND DANGEROUS: N   NON-COMMERCIAL
NAME: TONYA     HOMEPORT-CITY: COATZACOALCOS  CNTRY: MX
ACCESS CODE: 0   STATUS: SJ
ALIASES: OPSOFO 134/VSL 23   CG 08/VSL/SEUS
REMARKS: DEA INFO INDICATES VSL MAY SMUGGLE COCAINE INTO SEUS.
CATEGORY 2 LO EXPS 051288. PLS CONTACT EPIC UPON SIGHTING OR WITH
ADDTNL INFO FTS 8-654-6123/COMM 923 TERAYPPPM
LOOKOUT LVL: W
VESSEL DATA:
DESCRP-TYPE: GEN CARGO   LENGTH: GYR   BEAM: WY   YEAR: 1974
MISC NBRS: CG88-0385   TYPE: LE
           051288      TYPE: XX
2. NOTIFICATION: SUGGEST USCG DIST UNITS NOTIFY OP COMMANDER:
REQUEST DIST COMMANDERS NOTIFY EPIC FTS: IA570-6000/COMM 915-
522-6123 AUTOVON 245763777.
EM THIS LOOKOUT IS DEACTIVATE ON 051288.
LM SMITH, DUTY WATCH COMMENDER
EPIC - 00951
BT
#2872
NNNN
INT QSL/ZXX KKK
```

Fig. 1 *(Text edited for publication)*

Ken Reitz

Route 5, Box 156A
Louisa, VA 23093

The World of S C P C

Since the beginning of commercial radios in the 1920s, network headquarters have "fed" their affiliates via a system of telephone lines. This lumbering dinosaur (and smart source of revenue for Ma Bell) was "state of the art" for over 50 years. Then came the satellite. Geosynchronous orbit communications satellites were to the future of network radio what the atom bomb was to global warfare.

Before satellite distribution, radio networks had been asked to make do with a very unsatisfactory set of operating parameters. Limited affiliate access meant land lines had to reach from point A to point B. Low fidelity audio was unfit for music transmission. Hamstrung phone companies often were unable to provide extra lines or mobilize quick enough for a fast-breaking news situation. And finally, there were the ever-increasing rates which monopolies find so dear.

All the bonds that kept broadcast networks hobbling along under 1920s technology were pulverized in the hi-tech explosion of the 1970s.

Satellite delivered network broadcasting answers to all of the above problems. The only question left was which of the available technologies would best serve network needs.

What in the world is SCPC?

In domestic satellites which have video, the audio portion of the program is uplinked simultaneously on a subcarrier of the video. But what if a service, say, National Public Radio, has no video to uplink with the audio? Well, they could take over the rest of the audio subcarrier band.

Yes, but the folks who do the uplinking (called common carriers) want a premium price for those frequencies and anyway, NPR needs more frequencies than are available on one transponder's audio subcarrier band. They would have to be on several transponders and that would complicate things for each affiliate.

On top of that, everything sent up on that transponder has to be sent via that one common carrier which might be located in Sinkhole, MO, which isn't very convenient to their downtown Washington studios.

What if NPR could uplink its own FM carrier from its own facilities on a transponder, say number 3, on a satellite that wasn't already jammed with video, say Weststar 4? They could use a very narrow band carrier and put lots of separate feeds on one transponder. In fact, some of the bigger affiliates could uplink their own carrier and the network could be interactive. Network activities could come and go and all be independent of each other. Well, that's Frequency Modulated/Single Channel Per Carrier (FM/SCPC).

Incidentally, FM/SCPC eventually beat out the original SCPC which was Single Sideband/Single Channel Per Carrier (SSB/SCPC). Also, to get a stereo signal up on the bird, a service simply uplinks the left channel on one SCPC transmitter and the right channel on the other.

Homebrew FM/SCPC

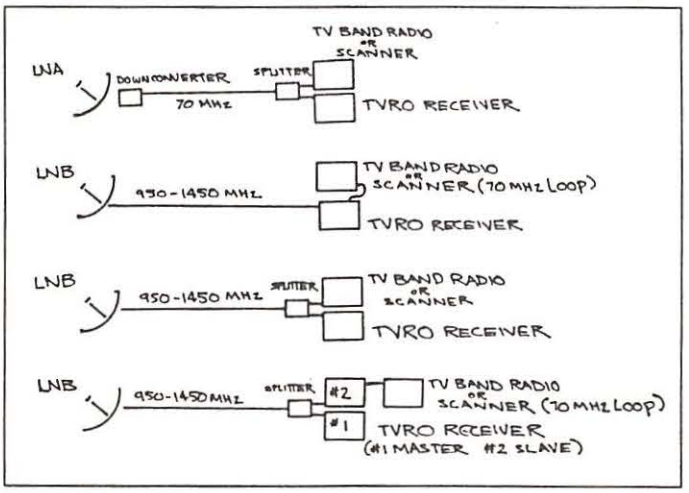
The home TVRO experimenter will encounter a problem right away in trying to tune SCPC signals. First, your receiver is designed to lock on to a video carrier in order to tune the audio subcarriers. But SCPC has no video carrier present and, anyway, SCPC signals aren't in the audio subcarrier band. How can you tune them? It's actually pretty simple.

Satellite signals hit your dish in the 4 GHz band and are converted down into a usable intermediate frequency (IF) via a downconverter. In older units, the signal from the low noise amplifier (LNA) passes to a separate downconverter which has an IF output of 70 MHz which goes to your receiver to be tuned.

In newer systems the signal from the low noise block downconverter (LNB) sends a set of frequencies from, typically, 950-1450 MHz to the receiver to be tuned. On the back of these receivers is a 70 MHz second IF loop which you can tune for SCPC signals.

Study the accompanying block diagrams to find out which method for tuning SCPC is best, given your receiver and downconverter configuration.

You'll notice that in each of the illustrations a TV band radio or programmable scanner is actually doing the tuning. Note, too, that unless you are using a second 70 MHz IF loop configuration the splitters illustrated should have a DC block on one leg so that the DC power to the downconverter won't end up in your scanner or TV band radio.



Foreign News on Satellite

Service	Satellite/Transponder	Time (EDT)
RAI	Satcom F2, 20	1:45/p.m.
BBC	Weststar W4, 24	1:00/p.m.
ITN	Galaxy G2, 11	4:30/p.m.
CBC	Anik D1, 20	9:00/p.m.

Note: The above are regularly scheduled but many others including newscasts from France and other capitals of Europe can crop up just about anywhere. The best bets are for G2, 11; F2, 21 and 24. Spanish language newscasts can be found on W4, 18; S1, 16; G1, 6; and G1, 20.

The SCPC Receiver

There are basically three types of radios to use as SCPC receivers:

1 A programmable scanner capable of tuning to 20 MHz on either side of the IF (usually 70 MHz, though there are nonstandard IF frequencies used by some TVRO receiver manufacturers) or capable of tuning the 950-1450 MHz direct from the downconverter. Advantages here are precise quartz synthesized tuning with digital read-out for reference. The big disadvantage is price. Expect to pay as much for your SCPC receiver as you did for your entire TVRO system: $400 to $1200. But watch out! Your satellite system may induce an irritating and irradicable hum in the SCPC audio.

2 The TV band radio which tunes TV channels 2-6. Advantage: price. Most discount stores sell them cheap (Radio Shack's Portavision 40 sells for $39.95). Disadvantages: Sloppy analog tuning. You'll never know where you are without a digital frequency display and narrowband SCPC signals often need very fine adjustments in tuning separate signals. Another disadvantage is that the TV band tuner cuts off the lower portion of the SCPC frequency band.

3 A hybrid TV band radio. This unit is the same as #2 except it's been modified to accept 75 ohm "F" connectors directly and its tuning has been spread to catch that lower part of the band that was missing. Disadvantages: the same bogus analog tuning is at work here but the price is right (about $90.00).

Bugs In Your SCPC

There are more than a few problems which can plague you while you set up for SCPC. Here are a few:

1 That hum mentioned earlier. No matter what you use as an SCPC

receiver, you may get the hum. It will be all over the band and it will prevent you from enjoying any SCPC reception. Some satellite receivers appear to be worse offenders than others. Uniden and Drake models (with 70 MHz loop) will work well without any hum.

2 Drifting away. In earlier days the low ticket home dish downconverters, when applied to SCPC reception, would drift wildly causing the listener to constantly adjust the tuning to keep listening. Newer high grade LNBs are much less prone to drifting. Keeping your downconverter on 24 hours/day helps keep it stable, too. If your system produces clear SCPC signals but exhibits a lot of drift, try a better grade (lower noise temperature) LNB. Your video will look better, too!

3 Right away when you first tune in SCPC signals you'll notice something missing about the audio. The reason is that your scanner or TV band radio is not designed for high fidelity output and that the original SCPC has been compressed at the uplink by a 2:1 or 3:1 ratio. A commercial receiver will have an expansion circuit through which the signal will pass and be restored to its original state.

This "companding" is done to conserve bandwidth on the transponder, while not sacrificing fidelity. Unfortunately, the home TVRO experimenter will have to sacrifice fidelity. It is possible to simulate expansion by routing the audio from your SCPC receiver to a graphic equalizer and thence to a stereo amplifier. Turn the stereo simulator switch on and your audio will be very listenable.

Next month I'll roam the Clarke belt with you and point out the best places to tune in this lesser known aspect of satellite TV.

Right now it's...

BACK TO BASICS

Last month I gave a brief overview of a typical TVRO system which included the dish, mount, actuator, and feedhorn electronics. From that point we begin this month's "Basics" with a look at the cable which brings the signal into the house and carries receiver-issued commands to the Polarotor motor and actuator.

Cables

In past years, dealers had to bury PVC pipe in the ground between the house and the dish to feed the various cables. Today, top quality direct-burial cable makes this a less dreary job. Such cable usually comes in 100 foot lengths with all connectors attached and is packed to be sold with the receiver. Good cable is critical so don't use flea-market specials and don't rummage through your junk box to patch together feedline. Buy the real thing and be happy.

The Receiver

This is where you can lose your sensibility. Receivers range from the functional and modest to the electronically glitzy and downright immodest. The trend in receivers is toward consolidation. In the beginning, one bought a receiver which tuned the 24 transponders by a click stop rotary knob in the front panel. There would be a switch to change polarity, a switch to change from 6.8 MHz to 6.2 audio (both were mono) and a power switch. That was it! No LEDs, no LCD display panels, no IR remote control, stereo (or virtually anything else we now take for granted). Later if you got tired of a hand crank to move the dish, you could add on an actuator.

The actuator control and power supply had their own housing and would sit next to the receiver. Still later, if you wanted stereo you could add on a stereo processor with its own controls which would sit next to the receiver. Even later with the advent of scrambling you would need a VideoCipher II which (you guessed it) would sit next to the receiver. This got to be quite an assemblage, not to mention a wiring nightmare.

Receiver manufacturers decided it would be best to combine the whole mess into one IR or UHF controlled unit. They called it the IRD (integrated receiver decoder) and it's a pretty good idea. There's less clutter around and it's all controlled from one hand held remote control.

The Heat Monster

There are, however, some drawbacks. One of the biggest problems comes from all those heat-producing power supplies getting jammed together in one cabinet. Add this design to the fact that TVRO owners like to stack receivers on TVs with VCRs or stick them all in a nice tight-fitting entertainment center and you have perfect conditions for thermal overload and breakdown. What you don't want is the VCII module to break down forcing you to send your entire receiver away for several weeks.

Buy a receiver without the VCII module, as first generation IRDs may have more problems than the original stand-alone VCII. If that breaks down you'll still have a satellite receiver to watch the unscrambled channels while your descrambler is being repaired.

Make sure your receiver is Ku compatible. With the proper feedhorn and additional Ku LNB you'll be all set for the future. Avoid receivers with remote controls that can't perform all the functions on the front panel of this receiver. Big hand-held remote controls are less of a nuisance than inadequate RCs. Hope to find a receiver that's "user friendly," easily programmed and without a bewildering control panel.

And, finally, don't believe everything you hear from dealers or read in TVRO magazines (including this article). The more sources of information you can muster the less you'll regret your system purchase.

SCPC Notes

Heil Ltd. sells a converted TV band radio which works very nicely for SCPC reception. They also have more information on the subject as well as new and used satellite TV systems at very reasonable prices for do-it-yourselfers. Write them at: Heil, Ltd., #2 Heil Drive, Marissa, IL 62257.

The World Satellite Almanac has a very thorough listing of all transponders with SCPC channels. Be sure to get the latest edition. Write: MLE, Inc., P.O. Box 159, Winter Beach, FL 32971.

mt

Paul Swearingen
3132 SE Irvingham
Topeka, KS 66605

Summer Wrap-up

Summer E-skip for FM and especially TV DXers this season seems to have been better than during several past seasons. Chris Hulse, of Eugene, Oregon, wrote to say that he received KTVK-3 Phoenix, KOTA-3 Rapid City, KEYT-3 Santa Barbara, and others, including some in Spanish, this past summer. He wondered if folks at the other end of the skip pattern were also receiving DX: "Do the folks in Mexico get Oregon DX, for instance?"

That's quite possible, Chris, and it has happened several times before. DXers in one club, WTFDA, compare loggings in their monthly bulletin, and quite often they log reciprocal DX from opposite ends of an E-skip path. This could indicate predictable atmospheric conditions along the bounce path.

No Known Cause

I should reiterate that no one has definitely discovered the exact cause of E-skip reflections of low band VHF TV signals and FM signals, but I've found that quite often a large, active weather system can herald possible E-skip conditions and signals from the opposite side of the system. For example, I logged KREM-2 from Spokane one night at 9 p.m. When I checked The Weather Channel on cable, I found that there was a large, scattered weather system over the Rockies.

I also pulled in stations from Salt Lake City and Las Vegas that evening. The next afternoon, conditions seemed to be shifting to the south, as I picked up KNAZ-2 from Flagstaff and KVOA-4 from Tucson. A directional antenna usually helps only in nulling out unwanted signals, by the way, but I'm lucky in having only weak signals to contend with on channels 2 and 3 in Topeka.

In the morning on the twenty-seventh, I managed to bag CBFT-2 Montreal, which conveniently had linkup problems and aired a test pattern for several minutes. But by afternoon, with thunderstorms over New Mexico and Texas, the western stations were rolling in and KUTV-2 and KTVX-4 Salt Lake City were mine for the taking. At 4 p.m. XEW-2 Mexico City popped in. All were photographed, with a leaf-shutter rangefinder camera, at 1/30th, f/11, at about three feet, on 400 ISO black-and-white film.

TV and FM DX Still Possible

Although E-skip conditions seem to peak during the early summer months when thunderstorms are most active, don't stop checking channel 2 just because the weather is getting cooler. Spectacular E-skip and tropo conditions (for UHF channels) can prevail any time of the year, with a secondary peak coming in December.

And the 1986 Thanksgiving week tropo opening across the northern U.S. is now legendary. So include a sweep of TV channels in your DXing activities during the fall and winter ahead.

Tuning the Soviet FM Bands

Duncan R.L. Hawkinns, G8KNF, of Milton Keynes, England, was kind enough to forward the address of a manufacturer who might be able to supply equipment for the Finnish DXer who earlier wrote to say that he was attempting to DX the USSR FM bands. He noted that the 4M amateur band which has opened up to VHF (non-Morse) amateurs has increased the availability of antennas in the UK.

Keynes suggests Sandpiper Communications, Pentwyn House, Penyard, Llwydcoed, Aberdare, Mid-Glam, CF44 OTU, United Kingdom. Duncan also mentioned that packet radio has really taken off in the UK, using the UOSAT Oscar gateway, plus 144.650 as a principle frequency in/out.

Duncan's not doing too bad at AM DXing, either. On AM he is able to pick up CJYQ St. Johns, Newfoundland, WYDE Birmingham, Alabama, WZAP Boston, and WBIX Jacksonville, Florida at his QTH. Thanks for your suggestions, Duncan!

Crystal Radio Kits

At last, someone is now manufacturing quality crystal radio kits. Chuck Graham, K6KDZ, who is stationed at McClellan AFB in California had built homebrew crystal sets and restored antique radios for 35 years and decided that a ready source of kits was needed. After a search for quality components he is offering two kits, one an inexpensive kit using newer components, and a second kit, using more authentic components, such as a fancier wood base, brass hardware, and a cat whisker-type detector.

For more information, watch for his ads or write to Regeneration Radio Co., Casa Loma Road, Grass Valley, California 95945, and tell Chuck that you saw it in *Monitoring Times*.

Loop Contest

I didn't receive as many plans for loop antennas as I had hoped -- although Ken Kuzenski, whose request for loop plans sparked the contest, wrote to say that he had completed a loop of his own but was too busy with graduation from LSU, getting married, and moving to North Carolina to spend much time on DX or drawing up plans. Gosh, why not, hi?! But the winner provided perhaps the simplest and easiest loop plan that I've seen... so simple that I really don't need to provide a diagram.

And the winner... Martin Blaise of Houston, Texas. Marty testified that it especially helps him with his weak daytimers on his DX-440 and helps him pull in great country and western music at night on stations with which he had problems before.

Simple Plan

Marty's loop is essentially a 50-foot piece of stranded, insulated wire which he's mounted on his wall with push-pins (I'd suggest #22 or #18 wire), making it easy to move and change from an omnidirectional (running around the room under the ceiling) or directional (mounted on one wall).

If he wanted to null out a certain station, he would erect the antenna broadside to the signal, and for a deeper null he would add more turns of wire. He runs each end of the wire to 58 A/U foam coax, which is attached to an adapter running into the DX-440 antenna jack.

The total cost was $16 or so, and Marty gives credit to Madison Electronics for helping him with the project and for suggestions. Your NRC Log Book will be in the mail, Marty, and congrats for taking the time to sit down and describe your project.

AM: Looking Up

A satellite hookup between two 50 kW AM stations may be the start of a technique which could effect a turnaround in declining AM radio listenership. Dave Nemo's "Road Gang Show," heard on WWL-870 from midnight to 5 a.m., has been targeted to truckers. When WWL

began to fade as their rigs moved out of the station's reception area, they had to search for another Country and Western show. Now, however, KRVN-880 has broadcast Nemo's show across the western U.S., clear to the coast.

The signal is delayed a micro-second so that the program is actually synchronized on the stations, which are adjacent on the dial. KRVN had been signing off at 11 p.m. but was licensed for full-time operation.

I can see all sorts of possible nationwide combos: How about KVOO-1170 Tulsa and WJJD-1160 Chicago? KOMA-1520 Oklahoma City and WCKY-1530 Cincinnati? WSM-650 and KTNN-660, which would blast the Grand Ol' Opry clear to New Zealand on a good night! Or WLS-890 and WCBS-880, which could be the second half of a four-station linkup literally blanketing the country, for special broadcasts, as suggested by KRVN's director of engineering, Vern Killion.

FCC Interested

The FCC seems to be encouraging such a pattern of "nationwide" stations, as it has issued one preliminary plan in which nationwide licenses could be issued for one of the new 1605-1705 kHz channels, which the International Telecommunications Union proposed to be open as of July 1, 1990.

The ITU allocated even-numbered channels through 1700 to the U.S. within 330 kilometers of the Canadian and Mexican borders, at a restriction of 1 kW with a quarter-wave antenna, and beyond that distance up to 10 kW on all channels. The FCC, which acknowledged that there has been "considerable demand for broadcast facilities" in the new band, was asking for comments as to whether or not the new spectrum should be open to all on equal terms or whether one or more channels should be reserved for certain types of applicants, as well as whether or not TIS stations currently on 1610 kHz should be moved to 1700 kHz.

Community Broadcasters

About three years ago I suggested that part of the band be turned over to community broadcasters on a temporary basis, with minimum standards enforced by both local bodies and the FCC. I still feel that local, community broadcasters should play a part in the new band.

I would again propose that one or more frequencies be turned over to local broadcasters with the following standards: 1 kW maximum power, nondirectional; minimum technical standards observed and documented; and shared-time operations encouraged by licensing only the following programming: no rebroadcasting of programs already available locally, no audio network affiliation permitted, except for transcribed programs, and no use of commercial pre-recorded music of over 60 seconds in duration. Advertising would be permitted, of course.

I think we'd see an immediate improvement in the quality of community programming as these stations would have to seek out groups to provide local programs, which could include anything from high school sports to musical events to churches to meetings to forums on community problems. Anyone else agree with me?

mt

We are sorry to report this will be Paul Swearingen's last month as editor of "Domestic Broadcasting." Paul has been with Monitoring Times since May 1984 when he started out as editor of the "Club Corner" column. He became editor of the AM Dxing column with the introduction of the new tabloid format in July 1986. Good luck and good DX, Paul.

Dr. John Santosuosso

P.O. Box 1116
Highland City, FL 33846

The Voice of Tomorrow

North America's most controversial pirate in recent years has been the Voice of Tomorrow, which features what is essentially racist programming. Late breaking news is that VOT has recently been heard around 1430 on a new frequency, 15039.5. We understand there may also be some new developments in regard to this station in the near future. If so, we will do our best to keep you up to date.

Equatorial Guinea

Recently we reported that the government station at Malabo on 6250 was to receive a new transmitter from Pierce Communications. Hopefully that will result in power increase and easier logging. We have now been advised that Pierce will verify reception reports for another (but not Malabo) Equatorial Guinea radio service. This is Radio Africa, or what is sometimes called the International Service of Equatorial Guinea.

Reports can be sent to Pierce International Communications, Inc., 10201 Torre Avenue, Suite 230, Cupertino, California 95014. Return postage would be appreciated. If you want to do it the hard way, send your report to Radio Africa, P.O. Box 851, Malabo, Equatorial Guinea.

However, direct replies from Equatorial Guinea for any of the country's stations are not very easy to obtain. The latest schedule we have for Radio Africa is 1700 to 2200 UTC on 9553 kHz.

Angola

We once published a clandestine teletype schedule in this column. Recently we received a copy of one of these transmissions from Florida's Joe Palkovic. A portion of it is reproduced here. What Joe monitored was a transmission of the Kwacha News Press (KUP), which is affiliated with the anti-Marxist UNITA movement. UNITA opposes the government of Angola.

Joe reports that most days conditions are not that good, but if you are persistent you may eventually get some decent copy. Probably the best time to try would be at 2300 on 7310 kHz.

Things We Would Like to Know Department

As far as we do know, Albania is the only country in the entire world which has officially declared itself an atheist state. So why are broadcasts from Vatican Radio in the Albanian language at 0330 and 1730 in the clear while those in Bulgarian at 0315 and 1715 are jammed?

If you want to hear for yourself, the 0315 and 0330 transmissions can easily be monitored on 6248 kHz. And if you have read this far, you know that the "Outer Limits" covers anything we think may interest you, not just pirates and clandestines!

Numbers, Maybe?

John Demmitt writes to tell us that CNN reported that an American serviceman informed Congress that USAF planes had been used to transport drugs to the U.S. from Central America. Apparently the matter first came to the attention of Congress as the result of a decoded radio message sent to a Congressman. The story also appeared on an NBC news feed but was not used on NBC's evening news. Interesting and much food for speculation!

Before leaving the subject of encrypted transmissions, we should note a report received from Dave White of Maine. He has been monitoring 4624 kHz. He has heard the German time and marine weather station FZU on this frequency. However, he also reports hearing a woman announcer on 4624 at 0048 UTC with the ID "Victor Lima Bravo Two." There was no message other than the continuously repeated ID.

Meanwhile KKN39, the alleged State Department station, has ended its mysterious round-the-clock CW transmissions on 4956.

The Great Cuban-American Radio War

It continues. Recently on several nights Cuba has had special extended broadcasts of its Radio Taino (Tour Radio) service running as late as 1100 p.m. EDT. The

"Now verifying"--Radio Africa via Pierce Communications. (Right) A clandestine teletype from Kwacha News Press.

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Radio Africa
Propietario
Guinea Ecuatorial

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BAND SHIFT
BAUDOT 50 240 R UOS MSI AGC -PGM-
CE
ILITARY OPERATIONS HAS DISCLOSED.
THE DISPATCH SAYS THAT UNITA FORCES ATTACKED MPLAS GUOOH
BATTALION SITUATED BETWEEN KANDA AND GABELA IN WHICH SEVEN MPLA
SOLDIERS WERE KILLED AND A LT. GEORGE ANTMNIO TAKEN PRISONER.
IN BIE PROVINCE, MPLA FORCES SONIONED BETWEEN LONGOTI AND
MBALA CHIOMBO WEKE ATTACKED AND EIGHT OF ITS SOLDIERS WERE KILLED.
IN THE SAME BATTLE, SIX AK-47 RIFLES AND EIGHT RPG87 SHELLS WERE
SEIZED.
MEANWMILE. IN MALANGE PROVINCE. A 22 YEAR-OLD MPLA SOLDIER
HAS DEFECTED TO UNITA FORCES. HE TOLD OUR CORRESPONDENT THAT HE WAS
FORCIBLY RECAPS
ED IN 1986 TO19S, MPLA FROM HIS ILLAGE IN HUAMBO.
NNNN 05/07/88 KUP NEWS AGENCY.
KUP 050788 411/88
SEX REFUSAL WOMAN KILLED...OCE...LAST.
A WOMAN AND HIR OHREE-MONTH-OLD BABY-GIRL HAVE BEEN KILLED AND
THEIR BICYVLE SEIZED AT THE WEEKEND IN SAPULA AREA SITUATED
BETWEEN SANGONDO AND SAMAFU IN LUENA - CAPITAL OF MOXLE PROVINCE.
UWELL-INFORMED MILITARYF
URCES OMLD KUP THAT A MAN IDENTIFIED AS
ETCUROOSEEN-TBBIEPEMFWOBEIBEHT
RIDING THE SAME BICYCLEHWHICH THE VICTIM JUDITH FELIX HAD BEEN
USING.

broadcasts attracted enough attention to make the front page of the *Miami Herald* and caused interference to several American stations. In addition to Taino, some of the earlier broadcasts featured programs from the Radio Progreso Network.

High power transmitters, capable of up to 500 kw were used. It's possible that for some broadcasts, the maximum power may have been used. However, in keeping with past such broadcasts 200 to 300 kw seems more likely. As is typical, the frequencies of 1160 and 1040 medium wave were used, but this time Cuba also transmitted on 830 kHz some evenings. The 830 transmissions were monitored here in central Florida at local level and could be heard easily on the smallest radios.

Demmitt, who has followed the Cuban radio situation closely for quite some time, adds the following information. It appears that the State Department had reached some sort of agreement with the Cuban government.

Cuba would be permitted one clear frequency (probably 1040) provided it did not relay any programming from the USSR (which it has done on 1040). In return the United States would "tone down" Radio Marti, drop plans for a TV version of Radio Marti, and crack down on anti-Castro pirates operating in Florida. The high-power Cuban broadcasts were the result of Cuban displeasure over lack of action on the above agreement.

This writer had also heard talk of possible government action against the pirates. However, if such plans ever did exist they appear to have been dropped. Meanwhile American broadcasters have protested the proposed TV version of Marti, fearing Cuba would retaliate with radio interference. They also claim the high-altitude balloon which would be used to transmit the television signal would be an aviation hazard.

The *Miami Herald* further reports that Cuban agents attempted to compromise security at the American interests section in Habana. Among other things, this led to an investigation by the National Security Agency. This in turn has fed speculation that perhaps communications or cryptological equipment may have had to be removed. And some people think radio only involves news, music, sports, and weather!

Great Britain

A final item from John Demmitt states that an additional half million pounds will be spent for equipment to monitor radio pirates in Great Britain. Those caught will not be able to secure licenses when they are made available to the public in 1989. The government claims it does not want the pirates to have an unfair advantage in building up an audience before licenses are granted.

That's it for another month. Your comments, suggestions, and contributions are always welcome. All letters with a return address will be acknowledged.

mt

Joe Woodlock

P.O. Box 98
Brasstown, NC 28902

Finding a Voice

Beacons represent the vast majority of transmissions in the low frequency area. The number of international broadcasters is in the dozens. Omega stations even less. There may be a couple of hundred coastal stations using the low frequencies, but only a handful can be heard at any one listening post. On the other hand, there are over 3,500 low frequency beacons in the United States and Canada. Several hundred are within range of almost any receiver on the North American continent.

Weather Stations

Does this mean that one is forced into listening to code to hear anything in low frequencies? No! At least, not yet. Although the numbers are dwindling, there are still some voice weather stations operating within the range of almost everyone.

A few years back there were quite a few continuous TWEB (Transcribed Weather Broadcasts) beacons operating in the U.S. and both continuous and scheduled weather broadcast beacons in Canada. All of these operate with both a CW identifier and the voice broadcasts on the same frequency. One can hear the voice detailing the weather with a somewhat faint CW signal in the background.

If the CW signal is too faint, identification of the beacon has to be based on the flight routes described. If the routes are in Nevada and you are tuned to 254, it is probable that you are hearing SPK in Reno. Today, you can sometimes identify it from the frequency, because there are fewer and fewer frequencies where two or more TWEB stations operate.

Declining Numbers

The number of U.S. weather broadcasts has declined sporadically and gradually in recent years. The latest official notification of eliminated broadcasts includes Atlanta (266/BR), Wichita (332/IC) and St. Louis (338/LM). Canada, on the other hand, made a major elimination about a year ago.

In the United States, only five beacons still include weather transmissions and these are continuous broadcasts. There are no longer any scheduled weather broadcasts on Canadian beacons.

Figure 1 is a listing of what is left in the way of voice from both countries. Try some of these from your area and some of those further away as well. The ones marked with an asterisk are often reported from some rather good distances.

Even some of these may be gone by now. Among those that may have dropped voice broadcasts in recent months are 254/ILJ, 305/RO, 335/LUK, 350/RG, 379/GKQ and 391/CM.

The fact that you don't hear the voice doesn't necessarily mean that it has been dropped, however. Chicago (350/ME) and its Milwaukee satellite (242/GM) were off the air for a couple of weeks last winter, possibly testing reaction to dropping the broadcasts. Other beacons have also shut down at times, usually for maintenance or repairs.

Special Opportunity

Many of the voice capability beacons operate at 200 to 400 watt power. When voice is eliminated, they usually continue at the same power for some time. But they are sending only the CW identifier. This usually results in the CW signals being heard at much greater distances than was the voice.

The Florida beacons that dropped voice have been heard as CW signals in the middle of the country almost regularly. Even if the voice is gone, you may have a better than average chance to at least log the identifier of these beacons.

You may have heard about future plans to expand the broadcast band frequencies to above 1700 kilohertz. This wouldn't seem to have anything to do with the frequencies below the broadcast band. But it does. For many years there have been aviation beacons operating in the 1600-1800 kHz frequencies. Now they are being forced to move.

One of the best known, or at least most frequently reported, was RAB/1613 from Rabinal, Guatemala. It has moved to 313 kHz. When the beacon changed frequencies, the ID was changed from RAB to RNB. Now the ID has been changed again, this time to RBN. If you used to hear RAB on 1613, you can try for it as RBN on 313. But it sure won't be as easy to log now.

mt

Fig. 1
Voice Transmissions from Canada and U.S.

194	TUK*	Nantucket MA
206	GLS*	Galveston TX
218	RL	Red Lake ONT
230	BI	Bismarck ND
	ILT	Albuquerque NM
	SH	Shreveport LA
236	GNI*	Grand Isle LA
242	EL	El Paso TX
	GM	Milwaukee WI
245	FS	Sioux Falls SD
248	WG*	Winnepeg MAN
251	AM	Amarillo TX
254	ILJ	Springfield MO
	SPK	Reno NV
266	MS	Minneapolis MN
305	RO	Roswell NM
326	MA	Midland TX
	PQO	Phoenix AZ
	YQK	Kenora ONT
332	SQQ	Santa Monica CA
335	LUK	Cincinnati OH
338	PBT	Red Bluff CA
	RYN	Tucson AZ
341	ORB	Orr MN
344	CL	Cleveland OH
	FCH	Fresno CA
	LNT	Millinocket ME
	YC	Calgary ALTA
350	ME	Chicago IL
	RG	Oklahoma City OK
353	IN	International Falls, MN
359	DO	Kansas City MO
362	EZB	Oakland CA
365	AA	Fargo ND
	FT*	Ft. Worth TX
	TV	Traverse City MI
371	GT	Great Falls MT
375	DW	Tulsa OK
	ELM*	Elmira NY
	SH	Staunton VA
379	DL	Duluth MN
	GKQ	Newark NJ
382	LQ	Boston MA
	MOG	Montague CA
391	CM	Columbus OH
394	ENZ	Nogales AZ
400	CI	Saute Ste. Marie MI
413	YHD	Dryden ONT

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The **Satellit 650 International** is the ultimate in German crafted portable radios. Along with excellent audio performance the Satellit 650 also has many fine features. 510 kHz to 29.999 MHz. 24 hour clock/calendar. 3 Bandwidths. 60 Memories. AM, FM, SSB, CW. Keyboard Entry. PLL Control. Nicad Battery Option.

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Satellit 400 $399.95 + $6 UPS

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FRG8800 $649.95 + $10 UPS

VHF/UHF General Coverage Receiver. The **YAESU FRG9600** is an all mode scanning receiver with many outstanding features. Covers: 60-905 MHz. 100 Memories. Keyboard Entry. SSB, FM, AM. FM/Wide & Narrow. 7 Digit Readout. Video option.

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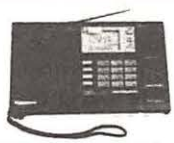

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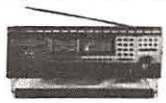

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Jock Elliott

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Can't Remember? ... Buy a Memory!

Whatzamatter? Your favorite DX receiver has no memories? You love your Drake R-7, Kenwood R-1000, Sony 6800W, whathaveyou, but it has no capacity to recall frequencies? Is that your problem, bunkie?

Well, there's hope at last, without having to resort to a large, expensive, and often electrically noisy personal computer. Radio Shack has just issued its new catalog to the press, and in it there is a gadget that just might help.

Called the "Digital Appointment Calendar/Data Bank" (stock number EC-319, catalog number 65-932), it is an electronic notebook, calendar, and calculator capable of storing more than 32,000 characters. Closed up, the pocket data bank measures 3" x 5" x 5/8". Open it up, and you'll see an alpha keyboard, a calculator keypad, and an LCD screen capable of displaying six lines.

Powered by long-life lithium batteries, this pocket secretary will store up to 1100 appointments anytime from now until the year 2099. It will also store and retrieve the names, addresses, and phone numbers of up to 1500 of your closest friends. In addition, there is room for up to 1500 brief memos for quick recall.

"Swell," you say, "but what does this have to do with my venerable Drake R-7?

The answer is: everything! You could use this pocket memory bank to store and recall your favorite frequencies at the touch of a button, to keep track of which stations you have QSLed and when, to create a tickler file that prods you to send out confirmation reminder letters, and to keep track of all those key names and addresses that you have accumulated over the years.

Granted, this is not as slick as a fully integrated computer database that might also be used to control your rig, but the pocket data bank costs only $79.95. If you want to know more, ask your local Radio Shack store.

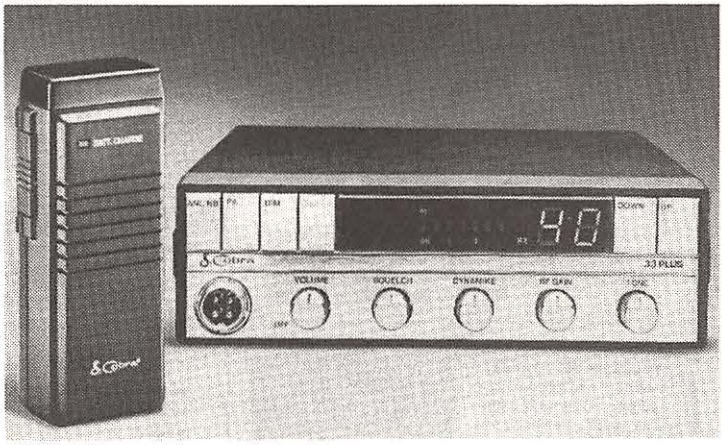
Another nifty idea

It happens inevitably to anyone who has a CB radio in the car: you're driving along, chatting with someone, and as you turn a corner, you find that you have wrapped the microphone cord around the steering column. A minor annoyance, to be sure, but one that has been eliminated forever by the folks at Cobra.

Cobra's new Model 33 PLUS CB radio features a cordless infrared microphone. The mike sits in a recharging cradle until you pick it up. Then just push-to-talk as you normally would. The cordless microphone has a line-of-sight range of about six feet. Look Ma, no cord!

There is provision for a traditional, corded microphone, but why bother?

The 40-channel, AM-only, Model 33 PLUS includes a three color bar-graph signal strength meter, up/down electronic tuning, and a channel 9 pushbutton. For those of you who normally operate in the noisy cab of a van, pick-up, or 18-wheeler, the Model 33 PLUS is capable of cranking out seven watts of audio. Suggested retail is $239.95, and for more info, contact Cobra Consumer Electronics Group, 6500 West Cortland St., Chicago, Illinois 60635, or call 312-889-8870.



Quick, Watson, A Trend is Afoot!

There is a trend afoot of which I heartily approve: more and more manufacturers are announcing CB radios with built-in weather radios.

NOAA's weather stations in the 162 MHz FM band are one of life's greatly underrated pleasures. They offer all weather, all the time, without commercials, straight from the horse's mouth -- the National Weather Service. The information they provide is tremen-

dously useful. Sometimes it is even entertaining. The weather stations near the ocean offer a wealth of nautical-type information that you won't get from the stations inland. In my household, we always make sure a weather radio is available, on the road or at home.

CB manufacturers have now recognized the value of weather radios and are building the capability to receive NOAA weather stations into 40 channel AM transceivers. Uniden offers the PC43 Marine CB with weather capability, Cobra has the Model 31 PLUS mobile with built-in weather, and now two other makers have entered the fray.

Midland recently announced the Model 77-162, a mobile 40-channel AM CB with all three weather channels, instant access to channels 9 and 19, and a mylar speaker -- making it, in the words of the Midland handout, "suitable for marine and off-road use." Suggested retail price of the Model 77-162 is $219.95. For additional information, contact Midland International, Consumer Communications Division, 1690 North Topping, Kansas City, Missouri 64120.

Radio Shack has come up with a new and interesting wrinkle in the CB/weather radio game. With the new catalog, Radio Shack is introducing a 40-channel emergency radio that includes the three weather channels, a snap-on battery pack (8 AA batteries), a magnetic mount antenna, and a cigarette lighter plug-in. The whole works stores in a plastic case you can slide under the seat or stick in the trunk. Although I haven't held this radio in my hands, it looks as if, with the addition of a "rubber ducky" antenna, it could be used as a walkie-talkie. The price of the TRC-475 is $89.95. See your local Shack for details.

Tired of driving awards?

If you occasionally receive driving awards for excessive velocity, i.e., you speed and get caught at it, Cobra has updated its Trapshooter radar detector with the Pro III model. It has extended range, increased capabilities to reject false signals, a rugged extruded aluminum case, and dual side-firing speakers that are loud enough to be heard in any truck or RV. There are even illuminated collars on the controls for easier operation after dark. Suggested retail: $229.95. Alternatively, you could slow down.

New York state is trying to pass a law making it illegal to use radar detectors in commercial vehicles. RADAR (the Radio Association Defending Airwave Rights, Inc.), the industry group which defends the use of detectors, is basing its defense on the notion that the 1934 Communications Act guarantees all citizens the right to receive any and all radio signals. Interesting, no?

What goes on here department

Nokia-Mobira sent out a news release announcing the M-10, "an economically priced mobile cellular phone," but no price was included in the press information. I called; it's $900 retail. I managed to control my urge to snap one up at such a bargain basement expense. I guess I just don't know "economically priced" when I see it. Nokia-Mobira can be reached at 2300 Tall Pines Drive, Suite 100, Largo, Florida 34641, or phone 813-536-5553.

Meanwhile, in its latest catalog, Radio Shack has introduced the CT-101, a mobile cellular phone for $799. Inquire at Radio Shack.

Until next time, if you want to share your favorite discovery or pet peeve in the world of consumer electronics, write to me c/o *Monitoring Times*.

mt

Program Review

From Current Affairs to the Theatre

OUTLOOK ****

So-called "magazine" programs are becoming increasingly prevalent on shortwave, as stations replace normal programs with more flexible (albeit theme-less) ones. It is refreshing to find one which can hold the listener's attention as well as the BBC's *Outlook* does.

Outlook is a mix of current affairs and features of general interest. A perfect example is a recent show which discussed the discovery of a planet outside the solar system, and then followed that with a feature on a participatory circus outside London!

All transmissions except the 1400 broadcast begin with a one-minute news summary, which is excellent if a bit too concise. (The 1400 transmission has five minutes of news preceding the actual program). The various broadcasts are of different lengths as well: the 1400 broadcast is 45 minutes, the 1900 broadcast is 39 minutes, and the 0100 broadcast is 30 minutes. The shortness of the 0100 broadcast does not affect the overall program quality, though.

The program has regular features as well, including a curious world-wide weather forecast. In this short spot, a listener can hear about the drought in the central regions of North America, or learn of the monsoons in northern India. This is one of the most fascinating parts of the program.

Presenters Hugh Sykes, John Tidmarsh, and Colin Hamilton do a commendable job of tying the various features together, and also do very good interviews. Overall, *Outlook* is an enjoyable way to spend 30...or 39...or 45 minutes of your time.

(BBC World Service, five times weekly, Mondays to Fridays: 1400, 1900; Tuesdays to Saturdays: 0100.)

NEWSLINE ***

Radio Netherlands produces many well-known programs, including *Media Network* and *Happy Station*. Perhaps less famous is the current affairs and analysis program *Newsline*.

The subjects of the reports often do not parallel the subjects of RN's news broadcast, which precedes *Newsline*. This seems to suggest that the reports are whatever is submitted by the correspondents, not necessarily breaking news.

Also, the correspondent reports are often long and dry, occasionally making it tough to pay attention to the program. Still, the material presented is informative and usually attractive enough to hold listeners' attention.

The format is quite different from that of *Outlook* (reviewed above). Instead of featuring conversation between a presenter and an interviewee as *Outlook* does, *Newsline* features correspondent submissions with little or no discussion. This often leaves questions unanswered.

Newsline ranks decidedly average, perhaps a bit above average, among news feature programs today. Still, it is reliable and unbiased, and for that reason a worthy production.

(Radio Netherlands, six times weekly, Mondays to Saturdays: 0405, 0635, 0735, 0835, 1035, 1135, 1435, 1635, 1835, 2035; Tuesdays to Sundays: 0235, 0535.)

PROMPT! ****

The BBC produces some of the most delightful quiz shows on the air, and the theatrical quiz *Prompt!* is no exception. The show returned to the air last month after a rather lengthy absence.

Two teams of actors compete on the show, hosted by Sheila Hancock. Unlike American game shows, points can be earned not just by answering the questions, but also by telling amusing anecdotes or giving information connected with the question.

Typical questions include the following: Why is it unlucky to wear green on stage? How many play titles can you think of which include place names? Why shouldn't MacBeth be mentioned inside a theater? Which classic play was described by a critic as "an open drain; a loathsome sore unbandaged"?

Listeners will find that they quickly lose track of the score. Winning the game is unimportant; consequently, all involved have an enjoyable time, as do listeners to this program.

(BBC World Service, weekly, Sunday: 0330, rep 1430; Wednesday: 1030.)

If you have comments on a particular program which you've heard on shortwave, we invite you to send them to *Kannon Shanmugam* at the address on page 59. Program ratings are keyed to the chart following his address.

The BBC's Outlook team (left to right): editor Alistair Lack, British reporter Nancy Wise, presenter Colin Hamilton, presenter John Tidmarsh, and British reporter John Thompson.

Your Guide to Shortwave Listening in October

How to Use This Section

This is your daily guide to the programs being broadcast on the international bands. Wherever possible, actual advance program details for the listed stations are included. To use this section, simply look up the day on which you are listening, check the time, and decide which program interests you. Then go to the frequency section in order to locate the frequency of the station/ program on the dial.

All days are in UTC. Keep in mind that the new UTC day begins at 0000 UTC. Therefore, if you are listening to the shortwave at 8:01 PM [EDT] on your local Thursday night, that's equal to 0001 UTC and therefore *Friday* UTC.

We invite readers to submit information and reviews about their favorite programs. These must be in UTC day and time and can be sent to program manager Kannon Shanmugam.

We also invite broadcast stations to submit advance program details for publication in *Monitoring Times*. Copy deadline is the 1st of the month preceding publication [e.g., details for programs to be broadcast in November must be received by Kannon Shanmugam by October 1st.] Information can be FAXed via 1-704-837-2216 and should indicate clearly that it is to be submitted to the *Monitoring Times* program guide.

Program Manager:
Kannon Shanmugam
4412 Turnberry Drive
Lawrence, KS 66046

Key to Program Ratings:
***** - outstanding
**** - excellent
*** - good
** - fair
* - don't waste your time

BBC - BBC, London, England
KYOI - KYOI, Saipan
RAI - Radio Austria Int'l, Vienna
RCI - Radio Canada Int'l, Montreal
WCSN - WCSN, Boston, Massachusetts

Sunday

2nd, 9th, 16th, 23rd, 30th

0000 BBC: World News
0000 RCI: News
0008 RCI: SWL Digest (SW radio)
0009 BBC: News about Britain
0015 BBC: Radio Newsreel
0030 BBC: Puccini and His World [ex 2nd: Play of the Week]
0100 BBC: News Summary
0101 BBC: Play of the Week
0200 BBC: World News
0209 BBC: British Press Review
0215 BBC: A Choice of Verse
0215 SRI: Swiss Shortwave Merry-Go-Round (SW radio)
0230 BBC: The Ken Bruce Show (music mix and entertainment news)
0300 BBC: World News
0309 BBC: News about Britain
0315 BBC: From Our Own Correspondent - **** - Good in-depth news stories.
0330 BBC: Prompt! - **** - Delightful theatrical quiz show, loaded with anecdotes. [ex 23rd, 30th: Just A Minute]
0400 BBC: Newsdesk
0430 BBC: English Songsmiths [ex 2nd: Sportsworld (at the Olympics)]
0445 BBC: Reflections (religion)
0450 BBC: Financial Review
0500 BBC: World News
0509 BBC: Twenty-Four Hours (news magazine)
0530 BBC: Lyrics and Lyricists
0545 BBC: Letter from America - ***** - Alistair Cooke's distinctly British view of America.
0600 BBC: Newsdesk
0630 BBC: Jazz for the Asking
0700 BBC: World News
0709 BBC: Twenty-Four Hours (news magazine)
0730 BBC: From Our Own Correspondent - **** (see Sun 0315)
0745 BBC: Words
0750 BBC: Waveguide - ** - DX program geared toward neophyte listeners.
0800 BBC: World News
0809 BBC: Reflections (religion)
0815 BBC: The Pleasure's Yours (classical music requests)
0900 BBC: World News
0909 BBC: British Press Review
0915 BBC: Science in Action
0940 BBC: Sportsworld [2nd only]
0945 BBC: Americans in Europe [ex 2nd]
1000 BBC: News Summary
1001 BBC: Short Story
1015 BBC: Classical Record Review
1030 BBC: Religious Service
1100 BBC: World News
1109 BBC: News about Britain
1115 BBC: From Our Own Correspondent - **** (see Sun 0315)
1130 BBC: Puccini and His World [ex 2nd: Play of the Week]
1200 BBC: News Summary
1201 BBC: Play of the Week
1300 BBC: World News
1300 RCI: Sunday Morning
1309 BBC: Twenty-Four Hours (news magazine)
1330 BBC: Sports Roundup
1345 BBC: The Tony Myatt Request Show
1400 BBC: News Summary
1401 BBC: The Tony Myatt Request Show, continued
1430 BBC: Prompt! - **** (see Sun 0330) [ex 23rd: Just a Minute]
1500 BBC: Radio Newsreel
1515 BBC: Concert Hall [ex 2nd: Sportsworld (at the Olympics)]
1600 BBC: World News
1609 BBC: News about Britain
1615 BBC: Latin Americans [ex 23rd: Rescuing the Rhine]
1645 BBC: Letter From America - ***** (see Sun 0545)
1700 BBC: World News
1709 BBC: Commentary
1715 BBC: Jazz for the Asking
1745 BBC: Sports Roundup
1800 BBC: Newsdesk
1830 BBC: Raffles [2nd, 9th]; Hancock's Half-Hour [16th]; Round the Horne [23rd]
1900 BBC: News Summary
1901 BBC: Classical Record Review [ex 2nd: From Raj to Rajiv]
1915 BBC: An Artist or Nothing [9th]; Just Williams [16th]; The National Brass Band Championships 1988 [23rd]
1945 BBC: Sportsworld [2nd only]
2000 BBC: World News
2009 BBC: Twenty-Four Hours (news magazine)
2030 BBC: Sunday Half-Hour (religious feature)
2100 BBC: News Summary
2101 BBC: Short Story
2115 BBC: The Pleasure's Yours (classical music requests)
2200 BBC: World News
2209 BBC: A Choice of Verse
2225 BBC: Book Choice
2230 BBC: Financial Review
2240 BBC: Reflections (religion)
2245 BBC: Sports Roundup
2300 BBC: World News
2309 BBC: Commentary
2315 BBC: Letter From America - ***** (see Sun 0545)
2330 BBC: A Green and Pleasant Land

Monday

3rd, 10th, 17th, 24th, 31st

0000 BBC: World News
0009 BBC: News about Britain
0015 BBC: Radio Newsreel
0030 BBC: Religious Service
0100 BBC: News Summary
0101 BBC: From Raj to Rajiv [3rd]; An Artist or Nothing [10th]; Just Williams [17th]; The National Brass Band Championships 1988 [24th]

Your Guide to Shortwave Listening in October

0200 BBC: World News
0209 BBC: British Press Review
0215 BBC: Peebles' Choice (music)
0230 BBC: Science in Action
0300 BBC: World News
0309 BBC: News about Britain
0315 BBC: Good Books - **** - Detailed opinions on specific books.
0330 BBC: Anything Goes (odd recordings)
0400 BBC: Newsdesk
0430 BBC: Malgudi Days (stories about rural India)
0445 BBC: Reflections (religion)
0450 BBC: Waveguide - ** (see Sun 0750)
0500 BBC: World News
0509 BBC: Twenty-Four Hours (news magazine)
0530 BBC: Nature Notebook
0545 BBC: Recording Of The Week
0600 BBC: Newsdesk
0630 BBC: A Green and Pleasant Land
0700 BBC: World News
0709 BBC: Twenty-Four Hours (news magazine)
0730 BBC: Latin Americans [ex 24th: Rescuing the Rhine]
0800 BBC: World News
0809 BBC: Reflections (religion)
0815 BBC: Malgudi Days (stories about rural India) [ex 31st]
0830 BBC: Anything Goes (odd recordings)
0900 BBC: World News
0909 BBC: British Press Review
0915 BBC: Good Books - **** (see Mon 0315)
0930 BBC: Financial News
0940 BBC: Sports Roundup
0945 BBC: Peebles' Choice (music)
1000 BBC: News Summary
1001 BBC: A Green and Pleasant Land
1030 BBC: The Vintage Chart Show
1100 BBC: World News
1109 BBC: News about Britain
1115 BBC: Health Matters
1130 BBC: The Ken Bruce Show (music mix with entertainment news)
1200 BBC: Radio Newsreel
1215 BBC: Raffles (drama) [3rd and 10th]; Hancock's Half-Hour [17th]; Round the Horne [24th]
1245 BBC: Sports Roundup
1300 BBC: World News
1309 BBC: Twenty-Four Hours (news magazine)
1330 BBC: Anything Goes (odd recordings)
1400 BBC: World News
1405 BBC: Outlook - **** - A very good magazine-format program.
1500 BBC: Radio Newsreel
1515 BBC: A Green and Pleasant Land
1545 BBC: English Songsmiths
1600 BBC: World News
1609 BBC: News about Britain
1615 BBC: Americans in Europe
1630 BBC: Lyrics and Lyricists
1645 BBC: The World Today (news feature)
1700 BBC: World News
1709 BBC: Commentary
1715 BBC: New Music
1745 BBC: Sports Roundup
1800 BBC: Newsdesk
1830 BBC: Multitrack 1: Top 20 - **** - Interesting British pop trends here.
1900 BBC: News Summary
1901 BBC: Outlook - **** (see Mon 1405)
1939 BBC: Stock Market Report
1945 BBC: Peebles' Choice (music)
2000 BBC: World News
2001 KYOI and WCSN: News
2006 KYOI and WCSN: News Focus
2009 BBC: Twenty-Four Hours (news magazine)
2030 BBC: Sports International (feature)
2030 KYOI and WCSN: News
2033 KYOI and WCSN: Monitor Forum (social commentary and the arts)
2045 KYOI and WCSN: Music Program
2100 BBC: News Summary
2101 BBC: Network UK (feature)
2101 KYOI and WCSN: News
2106 KYOI and WCSN: Letterbox
2115 BBC: Language Extra [3rd, 10th]; Turning Point [17th, 24th]
2115 KYOI and WCSN: Kaleidoscope (news features)
2130 BBC: The Vintage Chart Show
2130 KYOI and WCSN: News
2135 KYOI and WCSN: Conversations (discussion)
2200 BBC: World News
2201 KYOI and WCSN: News
2206 KYOI and WCSN: News Focus
2209 BBC: The World Today (news feature)
2230 BBC: Financial News
2230 KYOI and WCSN: News
2233 KYOI and WCSN: Monitor Forum (social commentary and the arts)
2240 BBC: Reflections (religion)
2245 BBC: Sports Roundup
2245 KYOI and WCSN: Music Program
2300 BBC: World News
2301 KYOI and WCSN: News
2306 KYOI and WCSN: Letterbox
2309 BBC: Commentary
2315 BBC: Mastering Photography
2315 KYOI and WCSN: Kaleidoscope (news features)
2330 BBC: Multitrack 1: Top 20 - **** (see Mon 1830)
2330 KYOI and WCSN: News
2335 KYOI and WCSN: Conversations (discussion)

Tuesday

4th, 11th, 18th, 25th

0000 BBC: World News
0009 BBC: News about Britain
0015 BBC: Radio Newsreel
0030 BBC: New Music
0100 BBC: News Summary
0101 BBC: Outlook - **** (see Mon 1405)
0130 BBC: Short Story
0145 BBC: Language Extra [4th, 11th]; Turning Point [18th, 25th]
0200 BBC: World News
0209 BBC: British Press Review
0215 BBC: Network UK (feature)
0230 BBC: Sports International (feature)
0300 BBC: World News
0309 BBC: News about Britain
0315 BBC: The World Today (news feature)
0330 BBC: John Peel (progressive rock music)
0400 BBC: Newsdesk
0430 BBC: The Spinners and Friends
0445 BBC: Reflections (religion)
0450 BBC: Financial News
0500 BBC: World News
0509 BBC: Twenty-Four Hours (news magazine)
0530 BBC: New Ideas
0540 BBC: Book Choice
0545 BBC: The World Today (news feature)
0600 BBC: Newsdesk
0630 BBC: Celluloid Rock (rock music in the movies)
0700 BBC: World News
0709 BBC: Twenty-Four Hours (news magazine)
0730 BBC: Language Extra [4th, 11th]; Turning Point [18th, 25th]
0745 BBC: Network UK (feature)
0800 BBC: World News
0809 BBC: Reflections (religion)
0815 BBC: Tech Talk
0830 BBC: New Music
0900 BBC: World News
0909 BBC: British Press Review
0915 BBC: The World Today (news feature)
0930 BBC: Financial News
0940 BBC: Sports Roundup
0945 BBC: English Songsmiths
1000 BBC: News Summary
1001 BBC: Discovery (science)
1030 BBC: Sports International (feature)
1100 BBC: World News
1109 BBC: News about Britain
1115 BBC: Waveguide - ** (see Sun 0750)
1125 BBC: Book Choice
1130 BBC: Citizens - **** - innovative serial with travails of five fictional Britons.
1200 BBC: Radio Newsreel
1215 BBC: Multitrack 1: Top 20 - **** (see Mon 1830)
1245 BBC: Sports Roundup
1300 BBC: World News
1309 BBC: Twenty-Four Hours (news magazine)

1330 BBC: Network UK (feature)
1345 BBC: Recording Of The Week
1400 BBC: World News
1405 BBC: Outlook - **** (see Mon 1405)
1445 BBC: The Spinners and Friends
1500 BBC: Radio Newsreel
1515 BBC: A Jolly Good Show (rock music)
1600 BBC: World News
1609 BBC: News about Britain
1615 BBC: Omnibus (topical feature)
1645 BBC: The World Today (news feature)
1700 BBC: World News
1709 BBC: Commentary
1715 BBC: Citizens - **** (see Tue 1130)
1745 BBC: Sports Roundup
1800 BBC: Newsdesk
1830 BBC: Development '88
1900 BBC: News Summary
1901 BBC: Outlook - **** (see Mon 1405)
1939 BBC: Stock Market Report
1945 BBC: Report On Religion - **** - News on modern religion.
2000 BBC: World News
2001 KYOI and WCSN: News
2006 KYOI and WCSN: News Focus
2009 BBC: Twenty-Four Hours (news magazine)
2030 BBC: Meridian (arts feature)
2030 KYOI and WCSN: News
2033 KYOI and WCSN: Monitor Forum (social commentary and the arts)
2045 KYOI and WCSN: Music Program
2100 BBC: News Summary
2101 BBC: Katherine Mansfield Stories
2101 KYOI and WCSN: News
2106 KYOI and WCSN: Letterbox
2115 BBC: Juste Plain Madness
2115 KYOI and WCSN: Kaleidoscope (news features)
2130 BBC: Latin Americans [ex 25th: Rescuing the Rhine]
2130 KYOI and WCSN: News
2200 BBC: World News
2209 BBC: The World Today (news feature)
2225 BBC: Book Choice
2230 BBC: Financial News
2240 BBC: Reflections (religion)
2245 BBC: Sports Roundup
2300 BBC: World News
2309 BBC: Commentary
2315 BBC: Concert Hall

Wednesday

5th, 12th, 19th, 26th

0000 BBC: World News
0001 WCSN: News
0006 WCSN: News Focus
0009 BBC: News about Britain
0015 BBC: Radio Newsreel
0030 BBC: Omnibus (topical feature)
0030 WCSN: News
0033 WCSN: Monitor Forum (social commentary and the arts)
0045 WCSN: Music Program
0100 BBC: News Summary
0101 BBC: Outlook - **** (see Mon 1405)
0101 WCSN: News
0106 WCSN: Letterbox
0115 WCSN: Kaleidoscope (news features)
0130 BBC: Report On Religion - **** (see Tue 1945)
0130 WCSN: News
0135 WCSN: Conversations (discussion)
0145 BBC: Country Style - ** - British country music?
0200 BBC: World News
0201 WCSN: News
0206 WCSN: News Focus
0209 BBC: British Press Review
0215 BBC: Lyrics and Lyricists
0230 BBC: Citizens - **** (see Tue 1130)
0230 WCSN: News
0233 WCSN: Monitor Forum (social commentary and the arts)
0245 WCSN: Music Program
0300 BBC: World News
0301 WCSN: News
0306 WCSN: Letterbox
0309 BBC: News about Britain
0315 BBC: The World Today (news feature)
0315 WCSN: Kaleidoscope (news features)
0330 BBC: Discovery (science)
0330 WCSN: News
0335 WCSN: Conversations (discussion)
0400 BBC: Newsdesk
0401 WCSN: News
0406 WCSN: News Focus
0430 BBC: Katherine Mansfield Stories
0430 WCSN: News
0433 WCSN: Monitor Forum (social commentary and the arts)
0445 BBC: Reflections (religion)
0445 WCSN: Music Program
0450 BBC: Financial News
0500 BBC: World News
0501 WCSN: News
0506 WCSN: Letterbox
0509 BBC: Twenty-Four Hours (news magazine)
0515 WCSN: Kaleidoscope (news features)
0530 BBC: Report On Religion - **** (see Tue 1945)
0530 WCSN: News
0535 WCSN: Conversations (discussion)
0545 BBC: The World Today (news feature)
0600 BBC: Newsdesk
0601 WCSN: News
0606 WCSN: News Focus
0630 BBC: Meridian (arts feature)
0630 WCSN: News
0633 WCSN: Monitor Forum (social commentary and the arts)
0645 WCSN: Music Program
0700 BBC: World News
0701 WCSN: News
0706 WCSN: Letterbox
0709 BBC: Twenty-Four Hours (news magazine)
0715 WCSN: Kaleidoscope (news features)
0730 BBC: Development '88
0730 WCSN: News
0735 WCSN: Conversations (discussion)
0800 BBC: World News
0809 BBC: Reflections (religion)
0815 BBC: Classical Record Review
0830 BBC: Raffles (drama) [5th, 12th]; Hancock's Half-Hour [19th]; Around the Horne [26th]
0900 BBC: World News
0909 BBC: British Press Review
0915 BBC: The World Today (news feature)
0930 BBC: Financial News
0940 BBC: Sports Roundup
0945 BBC: Jazz Scene UK [5th, 19th]; Folk in Britain [12th, 26th]
1000 BBC: News Summary
1001 BBC: Omnibus (topical feature)
1001 KYOI: News
1006 KYOI: News Focus
1030 BBC: Prompt! - **** (see Sun 0330) [ex 26th: Just a Minute]
1030 KYOI: News
1033 KYOI: Monitor Forum (social commentary and the arts)
1045 KYOI: Music Program
1100 BBC: World News
1101 KYOI: News
1106 KYOI: Letterbox
1109 BBC: News about Britain
1115 BBC: Katherine Mansfield Stories
1115 KYOI: Kaleidoscope (news features)
1130 BBC: Meridian (arts feature)
1130 KYOI: News
1135 KYOI: Conversations (discussion)
1200 BBC: Radio Newsreel
1201 KYOI: News
1206 KYOI: News Focus
1215 BBC: Smith and Son
1225 BBC: The Farming World
1230 KYOI: News
1233 KYOI: Monitor Forum (social commentary and the arts)
1245 BBC: Sports Roundup
1245 KYOI: Music Program
1300 BBC: World News
1301 KYOI: News
1306 KYOI: Letterbox
1309 BBC: Twenty-Four Hours (news magazine)
1315 KYOI: Kaleidoscope (news features)
1330 BBC: Development '88
1330 KYOI: News
1335 KYOI: Conversations (discussion)
1400 BBC: World News
1405 BBC: Outlook - **** (see Mon

1405)
1445 BBC: Report On Religion - **** (see Tue 1945)
1500 BBC: Radio Newsreel
1515 BBC: Mastering Photography
1530 BBC: After Henry [5th, 12th]; The Million Pound Radio Show [19th, 26th]
1600 BBC: World News
1601 WCSN: News
1606 WCSN: News Focus
1609 BBC: News about Britain
1615 BBC: Celluloid Rock (rock music in the movies)
1630 WCSN: News
1633 WCSN: Monitor Forum (social commentary and the arts)
1645 BBC: The World Today (news feature)
1645 WCSN: Music Program
1700 BBC: World News
1701 WCSN: News
1706 WCSN: Letterbox
1709 BBC: Commentary
1715 BBC: Society Today
1715 WCSN: Kaleidoscope (news features)
1730 BBC: New Ideas
1730 WCSN: News
1735 WCSN: Conversations (discussion)
1740 BBC: Book Choice
1745 BBC: Sports Roundup
1800 BBC: Newsdesk
1801 WCSN: News
1806 WCSN: News Focus
1830 BBC: Multitrack 2 - *** - Pop music and news.
1830 WCSN: News
1833 WCSN: Monitor Forum (social commentary and the arts)
1845 WCSN: Music Program
1900 BBC: News Summary
1901 BBC: Outlook - **** (see Mon 1405)
1901 WCSN: News
1906 WCSN: Letterbox
1915 WCSN: Kaleidoscope (news features)
1930 WCSN: News
1935 WCSN: Conversations (discussion)
1939 BBC: Stock Market Report
1945 BBC: Good Books - **** (see Mon 0315)
2000 BBC: World News
2001 KYOI and WCSN: News
2006 KYOI and WCSN: News Focus
2009 BBC: Twenty-Four Hours (news magazine)
2030 BBC: Assignment
2030 KYOI and WCSN: News
2033 KYOI and WCSN: Monitor Forum (social commentary and the arts)
2045 KYOI and WCSN: Music Program
2100 BBC: News Summary
2101 BBC: Network UK (feature)
2101 KYOI and WCSN: News
2106 KYOI and WCSN: Letterbox
2115 BBC: Celluloid Rock (rock music in the movies) [ex 19th: Sportsworld (World Cup soccer qualifying matches)]
2115 KYOI and WCSN: Kaleidoscope (news features)
2130 KYOI and WCSN: News
2135 KYOI and WCSN: Conversations (discussion)
2145 BBC: Recording Of The Week [ex 19th]
2200 BBC: World News
2201 KYOI and WCSN: News
2206 KYOI and WCSN: News Focus
2209 BBC: The World Today (news feature)
2230 BBC: Financial News
2230 KYOI and WCSN: News
2233 KYOI and WCSN: Monitor Forum (social commentary and the arts)
2240 BBC: Reflections (religion)
2245 BBC: Sports Roundup
2245 KYOI and WCSN: Music Program
2300 BBC: World News
2301 KYOI and WCSN: News
2306 KYOI and WCSN: Letterbox
2309 BBC: Commentary
2315 BBC: Write On... (letters)
2315 KYOI and WCSN: Kaleidoscope (news features)
2330 BBC: Multitrack 2 - *** (see Wed 1830)
2330 KYOI and WCSN: News
2335 KYOI and WCSN: Conversations (discussion)

Thursday

6th, 13th, 20th, 27th

0000 BBC: World News
0001 WCSN: News
0006 WCSN: News Focus
0009 BBC: News about Britain
0015 BBC: Radio Newsreel
0030 BBC: After Henry [6th, 13th]; The Million Pound Radio Show [20th, 27th]
0030 WCSN: News
0033 WCSN: Monitor Forum (social commentary and the arts)
0045 WCSN: Music Program
0100 BBC: News Summary
0101 BBC: Outlook - **** (see Mon 1405)
0101 WCSN: News
0106 WCSN: Letterbox
0115 WCSN: Kaleidoscope (news features)
0130 BBC: Waveguide - ** (see Sun 0750)
0130 WCSN: News
0135 WCSN: Young Ideas (program for teenagers)
0140 BBC: Book Choice
0145 BBC: Society Today
0200 BBC: World News
0201 WCSN: News
0206 WCSN: News Focus
0209 BBC: British Press Review
0215 BBC: Network UK (feature)
0230 BBC: Assignment
0230 WCSN: News
0233 WCSN: Monitor Forum (social commentary and the arts)
0245 WCSN: Music Program
0300 BBC: World News
0301 WCSN: News
0306 WCSN: Letterbox
0309 BBC: News about Britain
0315 BBC: The World Today (news feature)
0315 WCSN: Kaleidoscope (news features)
0330 BBC: Latin Americans [ex 27th: Rescuing the Rhine]
0330 WCSN: News
0335 WCSN: Young Ideas (program for teenagers)
0400 BBC: Newsdesk
0401 WCSN: News
0406 WCSN: News Focus
0430 BBC: Classical Record Review [ex 20th: Sportsworld]
0430 WCSN: News
0433 WCSN: Monitor Forum (social commentary and the arts)
0445 BBC: Reflections (religion)
0445 WCSN: Music Program
0450 BBC: Financial News
0500 BBC: World News
0501 WCSN: News
0506 WCSN: Letterbox
0509 BBC: Twenty-Four Hours (news magazine)
0515 WCSN: Kaleidoscope (news features)
0530 BBC: Peebles' Choice (music)
0530 WCSN: News
0535 WCSN: Young Ideas (program for teenagers)
0545 BBC: The World Today (news feature)
0600 BBC: Newsdesk
0601 WCSN: News
0606 WCSN: News Focus
0630 BBC: Smith and Son
0630 WCSN: News
0633 WCSN: Monitor Forum (social commentary and the arts)
0640 BBC: The Farming World
0645 WCSN: Music Program
0700 BBC: World News
0701 WCSN: News
0706 WCSN: Letterbox
0709 BBC: Twenty-Four Hours (news magazine)
0715 WCSN: Kaleidoscope (news features)
0730 BBC: Juste Plain Madness
0730 WCSN: News
0735 WCSN: Young Ideas (program for teenagers)
0745 BBC: Network UK (feature)
0800 BBC: World News

0809 BBC: Reflections (religion)
0815 BBC: Country Style - ** (see Wed 0145) [ex 20th: Sportsworld]
0830 BBC: John Peel (progressive rock music)
0900 BBC: World News
0909 BBC: British Press Review
0915 BBC: The World Today (news feature)
0930 BBC: Financial News
0940 BBC: Sports Roundup
0945 BBC: Society Today
1000 BBC: News Summary
1001 BBC: Assignment
1001 KYOI: News
1006 KYOI: News Focus
1030 BBC: After Henry [6th, 13rd]; The Million Pound Radio Show [20th, 27th]
1030 KYOI: News
1033 KYOI: Monitor Forum (social commentary and the arts)
1045 KYOI: Music Program
1100 BBC: World News
1101 KYOI: News
1106 KYOI: Letterbox
1109 BBC: News about Britain
1115 BBC: New Ideas
1115 KYOI: Kaleidoscope (news features)
1125 BBC: Book Choice
1130 BBC: Citizens - **** (see Tue 1130)
1130 KYOI: News
1135 KYOI: Young Ideas (program for teenagers)
1200 BBC: Radio Newsreel
1201 KYOI: News
1206 KYOI: News Focus
1215 BBC: Multitrack 2 - *** (see Wed 1830)
1230 KYOI: News
1233 KYOI: Monitor Forum (social commentary and the arts)
1245 BBC: Sports Roundup
1245 KYOI: Music Program
1300 BBC: World News
1301 KYOI: News
1306 KYOI: Letterbox
1309 BBC: Twenty-Four Hours (news magazine)
1315 KYOI: Kaleidoscope (news features)
1330 BBC: Network UK (feature)
1330 KYOI: News
1335 KYOI: Young Ideas (program for teenagers)
1345 BBC: Jazz Scene UK [6th, 20th]; Folk in Britain [13th, 29th]
1400 BBC: World News
1405 BBC: Outlook - **** (see Mon 1405)
1445 BBC: Write On... (letters)
1500 BBC: Radio Newsreel
1515 BBC: The Pleasure's Yours (classical music requests)
1600 BBC: World News
1606 WCSN: News Focus
1609 BBC: News about Britain
1615 BBC: Assignment
1630 WCSN: News
1633 WCSN: Monitor Forum (social commentary and the arts)
1645 BBC: The World Today (news feature)
1645 WCSN: Music Program
1700 BBC: World News
1701 WCSN: News
1706 WCSN: Letterbox
1709 BBC: Commentary
1715 BBC: Citizens - **** (see Tue 1130)
1715 WCSN: Kaleidoscope (news features)
1730 WCSN: News
1735 WCSN: Young Ideas (program for teenagers)
1745 BBC: Sports Roundup
1800 BBC: Newsdesk
1801 WCSN: News
1806 WCSN: News Focus
1830 BBC: Discovery (science)
1830 WCSN: News
1833 WCSN: Monitor Forum (social commentary and the arts)
1845 WCSN: Music Program
1900 BBC: News Summary
1901 BBC: Outlook - **** (see Mon 1405)
1901 WCSN: News
1906 WCSN: Letterbox
1915 WCSN: Kaleidoscope (news features)
1930 WCSN: News
1935 WCSN: Young Ideas (program for teenagers)
1945 BBC: Here's Humph!
2000 BBC: World News
2001 KYOI and WCSN: News
2006 KYOI and WCSN: News Focus
2009 BBC: Twenty-Four Hours (news magazine)
2030 BBC: Meridian
2030 KYOI and WCSN: News
2033 KYOI and WCSN: Monitor Forum (social commentary and the arts)
2045 KYOI and WCSN: Music Program
2100 BBC: News Summary
2101 BBC: Talking From... (Northern Ireland, Scotland, Wales)
2101 KYOI and WCSN: News
2106 KYOI and WCSN: Letterbox
2115 BBC: A Jolly Good Show (rock music)
2115 KYOI and WCSN: Kaleidoscope (news features)
2130 KYOI and WCSN: News
2135 KYOI and WCSN: Young Ideas (program for teenagers)
2200 BBC: World News
2201 KYOI and WCSN: News
2206 KYOI and WCSN: News Focus
2209 BBC: The World Today (news feature)
2225 BBC: Book Choice
2230 BBC: Financial News
2230 KYOI and WCSN: News
2233 KYOI and WCSN: Monitor Forum (social commentary and the arts)
2240 BBC: Reflections (religion)
2245 BBC: Sports Roundup
2245 KYOI and WCSN: Music Program
2300 BBC: World News
2301 KYOI and WCSN: News
2306 KYOI and WCSN: Letterbox
2309 BBC: Commentary
2315 BBC: Seven Seas
2315 KYOI and WCSN: Kaleidoscope (news features)
2330 BBC: Smith and Sons
2330 KYOI and WCSN: News
2335 KYOI and WCSN: Young Ideas (program for teenagers)
2340 BBC: The Farming World

Friday

7th, 14th, 21th, 28th

0000 BBC: World News
0009 BBC: News about Britain
0015 BBC: Radio Newsreel
0030 BBC: Music Now (modern classical music)
0100 BBC: News Summary
0101 BBC: Outlook - **** (see Mon 1405)
0130 BBC: Jazz Scene UK [7th, 21st]; Folk in Britain [14th, 28th]
0145 BBC: Talking From... (Northern Ireland, Scotland, Wales)
0200 BBC: World News
0209 BBC: British Press Review
0215 BBC: Tech Talk
0230 BBC: Citizens - **** (see Tue 1130)
0300 BBC: World News
0309 BBC: News about Britain
0315 BBC: The World Today (news feature)
0330 BBC: The Vintage Chart Show
0400 BBC: Newsdesk
0430 BBC: Country Style - ** (see Wed 0145)
0445 BBC: Reflections (religion)
0450 BBC: Financial News
0500 BBC: World News
0509 BBC: Twenty-Four Hours (news magazine)
0530 BBC: Mastering Photography
0545 BBC: The World Today (news feature)
0600 BBC: Newsdesk
0630 BBC: Meridian (arts feature)
0700 BBC: World News
0709 BBC: Twenty-Four Hours (news magazine)
0730 BBC: Write On... (letters)
0745 BBC: Seven Seas
0800 BBC: World News
0809 BBC: Reflections (religion)
0815 BBC: The Spinners and Friends
0830 BBC: Music Now (modern classical music)

0900 BBC: World News
0909 BBC: British Press Review
0915 BBC: The World Today (news feature)
0930 BBC: Financial News
0940 BBC: Sports Roundup
0945 BBC: A Choice of Verse
1000 BBC: News Summary
1001 BBC: Juste Plain Madness
1001 KYOI: News
1006 KYOI: News Focus
1030 BBC: Jazz for the Asking
1030 KYOI: News
1033 KYOI: Monitor Forum (social commentary and the arts)
1045 KYOI: Music Program
1100 BBC: World News
1106 KYOI: Letterbox
1109 BBC: News about Britain
1115 BBC: Talking From... (Northern Ireland, Scotland, Wales)
1115 KYOI: Kaleidoscope (news features)
1130 BBC: Meridian (arts feature)
1130 KYOI: News
1135 KYOI: World Link
1200 BBC: Radio Newsreel
1201 KYOI: News
1206 KYOI: News Focus
1215 BBC: Europe's World
1230 BBC: Business Matters
1233 KYOI: Monitor Forum (social commentary and the arts)
1245 BBC: Sports Roundup
1300 BBC: World News
1301 KYOI: News
1309 BBC: Twenty-Four Hours (news magazine)
1330 BBC: John Peel (progressive rock music)
1400 BBC: World News
1405 BBC: Outlook - **** (see Mon 1405)
1445 BBC: Nature Notebook
1500 BBC: Radio Newsreel
1515 BBC: From Raj to Rajiv [7th]; An Artist or Nothing [14th]; Just Williams [21st]; The National Brass Band Championships 1988 [28th]
1600 BBC: World News
1609 BBC: News about Britain
1615 BBC: Science in Action
1645 BBC: The World Today (news feature)
1700 BBC: World News
1709 BBC: Commentary
1715 BBC: Music Now (modern classical music)
1745 BBC: Sports Roundup
1800 BBC: Newsdesk
1830 BBC: Multitrack 3 - **** - Sarah Ward presents innovative rock music.
1900 BBC: News Summary
1901 BBC: Outlook - **** (see Mon 1405)
1939 BBC: Stock Market Report
1945 BBC: Personal View
2000 BBC: World News
2009 BBC: Twenty-Four Hours (news magazine)
2030 BBC: Science in Action
2100 BBC: News Summary
2101 BBC: Network UK (feature)
2115 BBC: Europe's World
2130 BBC: Business Matters
2145 BBC: Malgudi Days (stories about rural India)
2200 BBC: World News
2209 BBC: The World Today (news feature)
2230 BBC: Financial News
2240 BBC: Reflections (religion)
2245 BBC: Sports Roundup
2300 BBC: World News
2309 BBC: Commentary
2315 BBC: From The Weeklies (press review)
2330 BBC: Multitrack 3 - **** (see Fri 1830)

Saturday

1st, 8th, 15th, 22nd, 29th

0000 BBC: World News
0009 BBC: News about Britain
0015 BBC: Radio Newsreel
0030 BBC: Personal View
0045 BBC: Recording of the Week
0100 BBC: News Summary
0101 BBC: Outlook - **** (see Mon 1405)
0130 BBC: Juste Plain Madness
0145 BBC: Nature Notebook
0200 BBC: World News
0209 BBC: British Press Review
0215 BBC: Network UK (feature)
0230 BBC: People and Politics
0300 BBC: World News
0309 BBC: News about Britain
0315 BBC: The World Today (news feature)
0330 BBC: Europe's World
0345 BBC: Business Matters
0400 BBC: Newsdesk
0430 BBC: Here's Humph! [ex 1st: Sportsworld (at the Olympics)]
0445 BBC: Reflections (religion)
0450 BBC: Financial News
0500 BBC: World News
0509 BBC: Twenty-Four Hours (news magazine)
0530 BBC: Personal View
0545 BBC: The World Today (news feature)
0600 BBC: Newsdesk
0630 BBC: Meridian (arts feature)
0700 BBC: World News
0709 BBC: Twenty-Four Hours (news magazine)
0730 BBC: From The Weeklies (press review)
0745 BBC: Network UK (feature)
0800 BBC: World News
0809 BBC: Reflections (religion)
0815 BBC: A Jolly Good Show (rock music)
0900 BBC: World News
0909 BBC: British Press Review
0915 BBC: The World Today (news feature)
0930 BBC: Financial News
0940 BBC: Sports Roundup
0945 BBC: Personal View [ex 1st: Sportsworld (at the Olympics)]
1000 BBC: News Summary
1001 BBC: Here's Humph!
1015 BBC: Letter from America - ***** (see Sun 0545)
1030 BBC: People and Politics
1100 BBC: World News
1109 BBC: News about Britain
1115 BBC: Lyrics and Lyricists
1130 BBC: Meridian (arts feature)
1130 RAI: Report from Austria
1200 BBC: Radio Newsreel
1215 BBC: Multitrack 3 - **** (see Fri 1830)
1245 BBC: Sports Roundup
1300 BBC: World News
1309 BBC: Twenty-Four Hours (news magazine)
1330 BBC: Network UK (feature) [ex 1st: Sportsworld (at the Olympics)]
1345 BBC: Sportsworld
1400 BBC: News Summary
1401 BBC: Sportsworld
1500 BBC: Radio Newsreel
1515 BBC: Sportsworld
1600 BBC: World News
1609 BBC: News about Britain
1615 BBC: Sportsworld
1700 BBC: World News
1709 BBC: Words
1715 BBC: The Ken Bruce Show (music mix with entertainment news)
1745 BBC: Sports Roundup
1800 BBC: Newsdesk
1830 BBC: Puccini and His World [ex 1st: Play of the Week]
1900 BBC: News Summary
1901 BBC: Play of the Week
2000 BBC: World News
2009 BBC: Twenty-Four Hours (news magazine)
2030 BBC: Meridian (arts feature)
2100 BBC: News Summary
2101 BBC: Americans in Europe
2115 BBC: English Songsmiths [1st only]
2130 BBC: People and Politics
2200 BBC: World News
2209 BBC: From Our Own Correspondent - **** (see Sun 0315)
2225 BBC: Nature Notebook
2240 BBC: Reflections (religion)
2245 BBC: Sports Roundup
2300 BBC: World News
2309 BBC: Words
2315 BBC: The Tony Myatt Request Show

frequency SECTION

MT Monitoring Team

EAST COAST:
Greg Jordan,
Frequency Manager
1855-I Franciscan Terrace
Winston-Salem, NC 27127
Joe Hanlon, PA

WEST COAST:
Bill Brinkley, CA
Dave Kammler, CA

It's that time of year again, when it seems the powers-that-be all seem to conspire to make it difficult for the SWL; Time changes back from Daylight Savings to Standard in the U.S. and a few other countries. Some stations will change transmitting schedules with the season; others never changed in the first place. As we switch our clocks back, just use your common sense and carry on until the November issue when the dust should be settled and everything should return . . . to normal?

0000 UTC [8:00 PM EDT/5:00 PM PDT]

0000-0015		Voice of Kampuchea, Phnom-Penh	9693	11938			
0000-0030		BBC, London, England	5975	6005	6175	7325	
			9515	9590	9915	11955	
			12095	17710			
0000-0030		Kol Israel, Jerusalem	9435	11605	12080		
0000-0030		Radio Canada Int'l, Montreal	9755	11730			
0000-0030		Radio Korea, Seoul, South Korea	15575				
0000-0030	M	Radio Norway Int'l, Oslo	9620	11850			
0000-0030		Radio Sofia, Bulgaria	9700	11950			
0000-0045		WINB, Red Lion, Pennsylvania	15145				
0000-0050		Radio Pyongyang, North Korea	15115	15160			
0000-0055		Radio Beijing, PR China	9770	11715	15455		
0000-0100		(US) Armed Forces Radio and TV	6030	11790	15345		
0000-0100		All India Radio, New Delhi	6055	7215	9535	9910	
			11715	11745	15110		
0000-0100		CBC Northern Quebec Service	6195	9625			
0000-0100		CBN, St. John's, Newfoundland	6160				
0000-0100		CBU, Vancouver, British Colombia	6160				
0000-0100		CFCF, Montreal, Quebec	6005				
0000-0100		CFCN, Calgary, Alberta	6030				
0000-0100		CHNS, Halifax, Nova Scotia	6130				
0000-0100		CKWX, Vancouver, British Colombia	6080				
0000-0100		CFRB, Toronto, Ontario	6070				
0000-0100		FEBC, Manila, Philippines	15445				
0000-0100		(US) Far East Network, Tokyo	3910				
0000-0100		KSDA, Guam	15125				
0000-0100		KVOH, Rancho Simi, California	17775				

LEGEND

* The first four digits of an entry are the broadcast start time in UTC. The second four digits represent the end time.
* In the space between the end time and the station name is the broadcast schedule.

S=Sunday M=Monday T=Tuesday W=Wednesday
H=Thursday F=Friday A=Saturday

If there is no entry, the broadcasts are heard daily. If, for example, there is an entry of "M," the broadcast would be heard only on Mondays. An entry of "M,W,F" would mean Mondays, Wednesdays and Fridays only. "M-F" would mean Mondays through Fridays. "TEN" indicates a tentative schedule and "TES" a test transmission.

* [ML] after a frequency indicates a multi-lingual transmission containing English-language programs.
* The last entry on a line is the frequency. Codes here include "SSB" which indicates a Single Sideband transmission, and "V" for a frequency that varies. [ML] after a frequency indicates a multi-lingual transmission containing English-language programs.
* v after a frequency indicates that it varies
* Notations of USB and LSB (upper and lower sideband transmissions) usually refer only to the individual frequency after which they appear.
* Listings followed by an asterisk (*) are for English lessons and do not contain regularly scheduled programming.

We suggest that you begin with the lower frequencies that a station is broadcasting on and work your way up the dial. Remember that there is no guarantee that a station will be audible on any given day. Reception conditions can change rapidly, though, and if it is not audible one night, it may well be on another.

HOW TO USE THE PROPAGATION CHARTS

Propagation charts can be an invaluable aid to the DXer in determining which frequencies are likely to be open at a given time. To use the propagation charts, choose those for your location (the are divided into east coast, midwest and west coast of North America). Then look for the one most closely describing the geographic location of the station you want to hear.

Once you've located the correct charts, look along the horizontal axis of the graph for the time that you are listening. The top line of the graph shows the Maximum Useable Frequency [MUF] and the lower line the Lowest Useable Frequency [LUF] as indicated on the vertical axis of the graph.

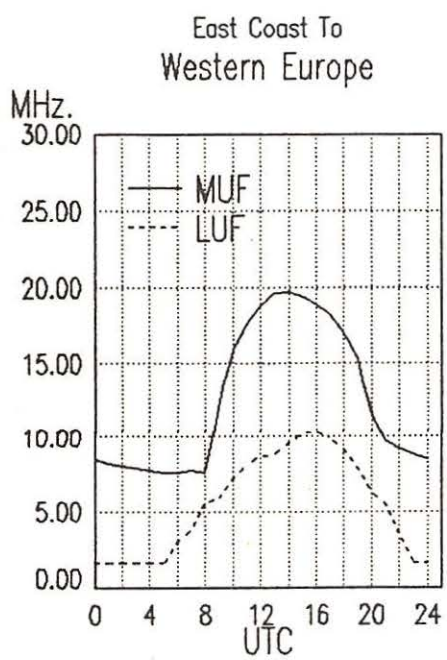
While there are exceptions to every rule (especially those regarding shortwave listening), you should find the charts helpful in determining the best times to listen for particular regions of the world. Good luck!

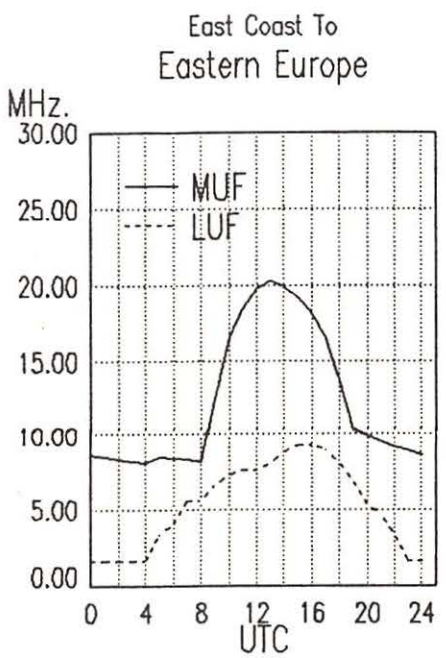
frequency SECTION

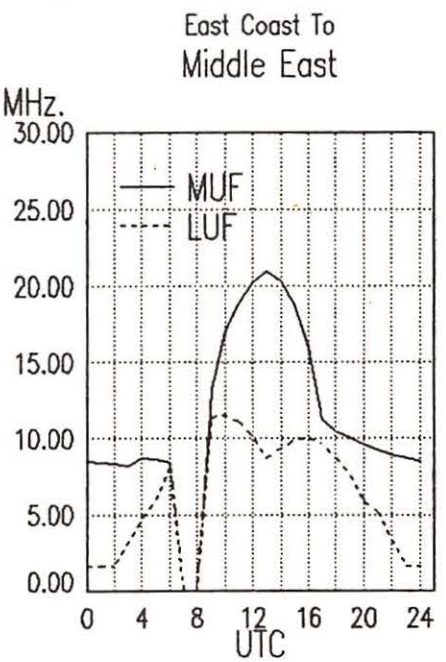
0000-0100		KYOI, Saipan	15405			
0000-0100		Radio Australia, Melbourne	15140	15160	15240	15320
			15395	17750	17795	
0000-0100		Radio Baghdad, Iraq	6120			
0000-0100		Radio Havana Cuba	9655			
0000-0100		Radio Luxembourg	6090			
0000-0100		Radio Moscow, USSR	6170	7115	7165	7195
			9530	9720	9765	9890
0000-0100		Radio New Zealand, Wellington	15150	17705		
0000-0100		Radio for Peace, Costa Rica	21555			
0000-0100		Radio Thailand, Bangkok	9655	11905		
0000-0100		SBC Radio One, Singapore	5010	5052	11940	
0000-0100		Spanish Foreign Radio, Madrid	9630	11880		
0000-0100	M-A	Superpower KUSW, Utah	15580			
0000-0100		Voice of America, Washington	5995	6130	7170	7200
			7280	9455	9775	9815
			11580	11695	11740	15205
0000-0100	T-A	Voice of Nicaragua, Managua	6100			
0000-0100		WCSN, Boston, Massachusetts	9850			
0000-0100		WHRI, Noblesville, Indiana	9770	17830		
0000-0100		WRNO, New Orleans, Louisiana	13760			
0000-0100		WYFR, Oakland, California	5950	9505	13695	
0030-0045		BBC, London, England*	6195	7235	9570	11820
			15435			
0030-0055	M-A	BRT, Brussels, Belgium	9925	11695		
0030-0100		BBC, London, England	5975	6005	6175	6195
			7325	9515	9915	9590
			12095	17710		
0030-0100		HCJB, Quito, Ecuador	9720	11775	11910	15155
0030-0100		Radio Austria Int'l, Vienna	9875			
0030-0100	M-A	Radio Budapest, Hungary	6110	9520	9585	9835
			11910	15160		
0030-0100		Radio Canada Int'l, Montreal	5960	9755		
0030-0100		Radio Kiev, Ukrainian SSR	7205	7400	9640	
			11790			
			13645			
0030-0100		SLBC, Colombo, Sri Lanka	6005	9720		
0035-0040		All India Radio, New Delhi	3925	4860		
0045-0100		Radio Berlin Int'l, E. Germany	6080	9730		
0045-0100	A	Radio New Zealand, Wellington	15150	17705		
0048-0100		WINB, Red Lion, Pennsylvania	15145			
0050-0100		Vatican Radio, Vatican City	6150	9605	11780	

0100 UTC [9:00 PM EDT/6:00 PM PDT]

0100-0103	S	Port Moresby, Papua New Guinea	3295	4890	5960	5985
			6020	6040	6080	6140
			9520			
0100-0110		Vatican Radio, Vatican City	6150	9605	11780	
0100-0115		All India Radio, New Delhi	6055	7215	9535	9910
			11715	11745	15110	
0100-0120		RAI, Rome, Italy	9575	11800		
0100-0130		Kol Israel, Jerusalem	7469	9435	9855	
0100-0130		Radio Berlin Int'l, East Germany	6080	9730		
0100-0130		Radio Japan, Tokyo	15280	17810	17835	17845
0100-0130		Laotian National Radio	7113v			
0100-0130	S,M	WINB, Red Lion, Pennsylvania	15145			
0100-0150		Deutsche Welle, West Germany	6040	6085	6145	9565
			9735	11865		
0100-0155		Radio Austria Int'l, Vienna	9875			
0100-0200		(US) Armed Forces Radio and TV	6030	11790	15345	
0100-0200		BBC, London, England	5975	6005	6175	7325
			9515	9590	9915	
0100-0200		CBC Northern Quebec Service	6195	9625		
0100-0200		CBN, St. John's, Newfoundland	6160			
0100-0200		CBU, Vancouver, British Colombia	6160			
0100-0200		CFCF, Montreal, Quebec	6005			
0100-0200		CFCN, Calgary, Alberta	6030			
0100-0200		CHNS, Halifax, Nova Scotia	6130			
0100-0200		CKWX, Vancouver, British Colombia	6080			
0100-0200		CFRB, Toronto, Ontario	6070			
0100-0200		(US) Far East Network, Tokyo	3910			
0100-0200		FEBC, Manila, Philippines	15445			
0100-0200		HCJB, Quito, Ecuador	9720	11775	11910	15155
0100-0200	T-A	KVOH, Rancho Simi, California	17775			
0100-0200		KYOI, Saipan	15405			
0100-0200		Radio Australia, Melbourne	15160	15180	15240	15320
			15395	17715	17795	
			17750			







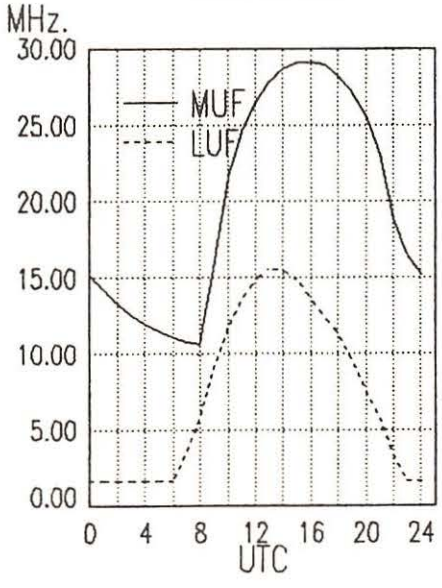
frequency SECTION

0100-0200		Radio Baghdad, Iraq	11775	11810		
0100-0200	S,M	Radio Canada Int'l, Montreal	5960	9755		
0100-0200		Radio Havana Cuba	9655			
0100-0200		Radio Japan, Tokyo	5960	11815	17810	
0100-0200		Radio Luxembourg	6090			
0100-0200		Radio Moscow, USSR	6170	7115	7165	7195
			9530	9600	9720	9890
0100-0200		Radio Moscow World Service	17675	17850	17860	
0100-0200		Radio New Zealand, Wellington	12045	15150		
0100-0200		Radio for Peace, Costa Rica	13660			
0100-0200		Radio Prague, Czechoslovakia	5930	6055	7345	9540
			9630	9740	11990	
0100-0200		Radio Thailand, Bangkok	9655	11905		
0100-0200		SBC Radio One, Singapore	5010	5052	11940	
0100-0200		SLBC, Colombo, Sri Lanka	6005	9720	15425	
0100-0200		Spanish Foreign Radio, Madrid	9630	11880		
0100-0200	T-S	Superpower KUSW, Utah	15580			
0100-0200		Voice of America, Washington	5995	6130	9455	9775
			9815	11580	11740	15205
0100-0200		Voice of Indonesia, Jakarta	9680	11790		
0100-0200		WCSN, Boston, Massachusetts	9850			
0100-0200		WHRI, Noblesville, Indiana	7400	9495		
0100-0200		WRNO New Orleans, Louisiana	7355			
0100-0200		WYFR, Oakland, California	5950			
0100-0200	T-A	WYFR Satellite Net, California	9505			
0130-0140	T-S	Voice of Greece, Athens	7430	9420	11645	
0130-0155	S	Radio Austria Int'l, Vienna	9875			
0130-0200		Radio Budapest, Hungary	6110	9520	9835	9883
			11910	15160		
0130-0200		Radio Veritas Asia, Philippines	15330	15365		
0130-0200		WINB, Red Lion, Pennsylvania	15145			

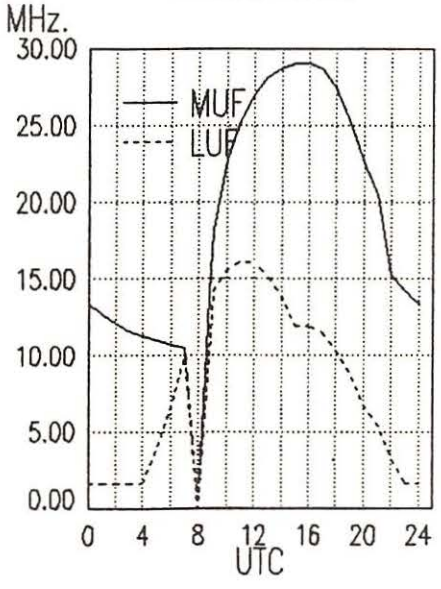
0200 UTC [10:00 PM EDT/7:00 PM PDT]

0200-0215		Vatican Radio, Vatican City	7125	9650		
0200-0225		Kol Israel, Jerusalem	7460	9435	9855	
0200-0230		BBC, London, England	5975	6005	6175	7325
			9410	9515	9590	9915
0200-0230		Burma Bcasting Service, Rangoon	7185			
0200-0230	S	Radio Austria Int'l, Vienna	9875			
0200-0230	W,A	Radio Budapest, Hungary	6110	9520	9585	9835
			9883	11910	15160	
0200-0230		Swiss Radio Int'l, Berne	6135	9725	9885	12035
			17730			
0200-0245		Radio Berlin Iny'l, E. Germany	6080	9730		
0200-0250		Deutsche Welle, West Germany	7285	9690	11945	
0200-0250		Radio Baghad, Iraq	11775	11810		
0200-0250		Radio Bras, Brasilia, Brazil	11745v			
0200-0255		Radio Bucharest, Romania	5990	6155	9510	9570
			11830	11940		
0200-0255		RAE, Buenos Aires, Argentina	9690	11710		
0200-0300		(US) Armed Forces Radio and TV	6030	11790	15345	
0200-0300		CBC Northern Quebec Service	6195	9625		
0200-0300		CBN, St. John's, Newfoundland	6160			
0200-0300		CBU, Vancouver, British Colombia	6160			
0200-0300		CFCF, Montreal, Quebec	6005			
0200-0300		CFCN, Calgary, Alberta	6030			
0200-0300		CFRB, Toronto, Ontario	6070			
0200-0300		CHNS, Halifax, Nova Scotia	6130			
0200-0300		CKWX, Vancouver, British Colombia	6080			
0200-0300		(US) Far East Network, Tokyo	3910			
0200-0300		HCJB, Quito, Ecuador	9720	11775	15155	
0200-0300		KSDA, Guam	17865			
0200-0300	T-A	KVOH, Rancho Simi, California	13695			
0200-0300		KYOI, Saipan	17780			
0200-0300		Radio Australia, Melbourne	15240	15320	17795	
0200-0300		Radio Cairo, Egypt	9475	9675		
0200-0300		Radio Canada Int'l, Montreal	9535	9755	11845	11940
0200-0300		Radio Havana Cuba	6140	9655		
0200-0300		Radio Luxembourg	6090			
0200-0300		Radio Moscow, USSR	6170	7115	7165	7195
			7290	9530	9600	9700
			9720	9890	15425	
0200-0300		Radio Moscow World Service	17675	17860	17880	
0200-0300		Radio Orion, South Africa	3955			
0200-0300		Radio for Peace, Costa Rica	13660			
0200-0300	A	Radio New Zealand, Wellington	15150	17705		
0200-0300		Radio Polonia, Warsaw, Poland	6095	6135	7145	7270

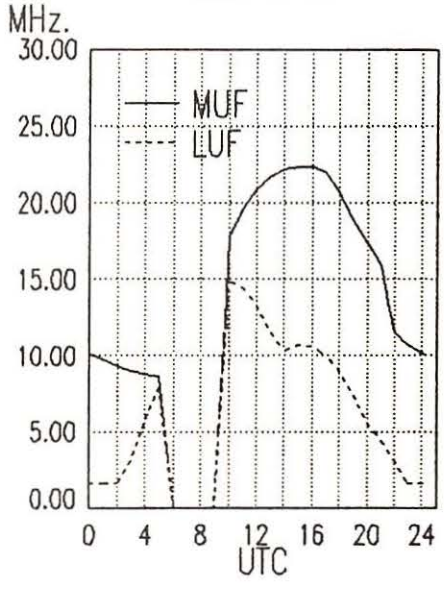
East Coast To
West Africa



East Coast To
Central Africa



East Coast To
East Africa



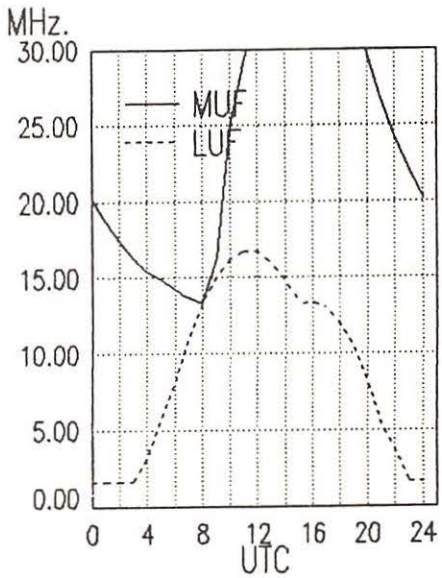
frequency SECTION

		9525	11815	15120		
0200-0300	Radio RSA, South Africa	9580	9615	11730		
0200-0300	Radio Thailand, Bangkok	9655	11905			
0200-0300	SBC Radio One, Singapore	5010	5052	11940		
0200-0300	SLBC, Colombo, Sri Lanka	6005	9720	15425		
0200-0300 T-S	Superpower KUSW, Utah	11695				
0200-0300	Voice of America, Washington	5995	6130	9775	15205	
0200-0300	Voice of Asia, Taiwan	7285				
0200-0300	Voice of Free China, Taiwan	5985	9680			
0200-0300	Voice of Kenya, Nairobi	6045				
0200-0300	WCSN, Boston, Massachusetts	9850				
0200-0300	WINB, Red Lion, Pennsylvania	15145				
0200-0300	WHRI, Noblesville, Indiana	7400	9495			
0200-0300	WRNO, New Orleans, Louisiana	7355				
0200-0300	WYFR, Oakland, California	5950	9680			
0200-0300 T-S	WYFR Satellite Net, California	9505				
0215-0220	Radio Nepal, Kathmandu	5005	7165			
0230-0240	Port Moresby, Papua New Guinea	3925	4890	5960	5985	
		6020	6040	6080	6140	
		9520				
0230-0245TWFS	Radio Budapest, Hungary	6110	9520	9835	11910	
		15160				
0230-0245	Radio Pakistan, Islamabad	7010	11570	15115	15580	
		17660				
0230-0300	BBC, London, England	5975	6005	6175	7325	
		9410	9515	9915		
0230-0300	Radio Netherland, Hilversum	6020	6165	9590	9895	
0230-0300 T-A	Radio Portugal, Lisbon	6060	9600	9635	9680	
		9705	11840			
0230-0300	Radio Sweden, Stockholm	9695	17840	SSB		
0230-0300	Radio Tirana, Albania	7065	9760			
0240-0250	All India Radio, New Delhi	3905	4860	4880	4895	
		5960	5990	6110	6120	
		7195	7295	9550	9610	
		11830	11870	15305		
0245-0300	Radio Berlin Int'l, E. Germany	6080	9620	9730	11785	
0245-0300	Radio Korea, Seoul, South Korea	7275	15375			

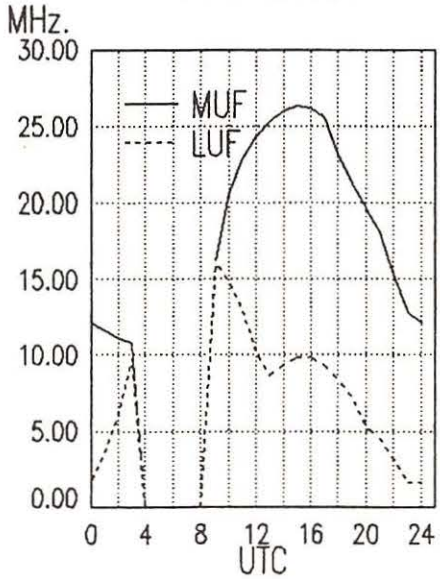
0300 UTC [11:00 PM EDT/8:00 PM PDT]

0300-0330	Kol Israel, Jerusalem	7460	9435	9855	
0300-0330	Radio Berlin Int'l, E. Germany	6080	9620	9730	11785
0300-0330	Radio Kiev, Ukrainian SSR	7150	7205	7400	15455
0300-0330	WINB, Red Lion, Pennsylvania	15145			
0300-0400 T-A	KVOH, Rancho Simi, California	13695			
0300-0400	Radio Korea (South), Seoul	7275	15575		
0300-0400	Radio Moscow, USSR	6170	7115	7165	7195
		7290	9600	9700	9890
		15425			
0300-0400	Radio Moscow World Service, USSR	17675	17850	17860	17880
0300-0400 T-S	Superpower KUSW, Utah	11695			
0300-0400	WHRI, Noblesville, Indiana	7400	9495		
0300-0400	WRNO, New Orleans, Louisiana	7355			
0300-0400	WYFR, Oakland, California	15170			
0300-0400	WYFR Satellite Net, California	9505			
0300-0307	Radio Pakistan, Islamabad	5090	5930	7095	
0300-0310	CBC Northern Quebec Service	6195	9625		
0300-0325	Radio Netherland, Hilversum	6020	6165	9590	9895
0300-0330	BBC, London, England	3955	5975	6005	6155
		6175	6195	7325	9410
		9515	9915	12095	
0300-0330	Radio Cairo, Egypt	9475	9675		
0300-0330	Radio Japan, Tokyo	11870	15195	17810	17825
		21610			
0300-0345 A	Radio New Zealand, Wellington	15150	17705		
0300-0350	Deutsche Welle, West Germany	6010	6120	9545	9605
		9700	11785		
0300-0355	Radio Beijing, PR China	9770	11715	11860	15180
		15290	15455		
0300-0355	Radio Polonia, Warsaw, Poland	6095	6135	7145	7270
		9525	11815	15120	
0300-0356	Radio RSA, South Africa	9580	9615	11730	
0300-0400	(US) Armed Forces Radio and TV	6030	11730	15435	
0300-0400	CBN, St. John's, Newfoundland	6160			
0300-0400	CBU, Vancouver, British Colombia	6160			
0300-0400	CFCF, Montreal, Quebec	6005			

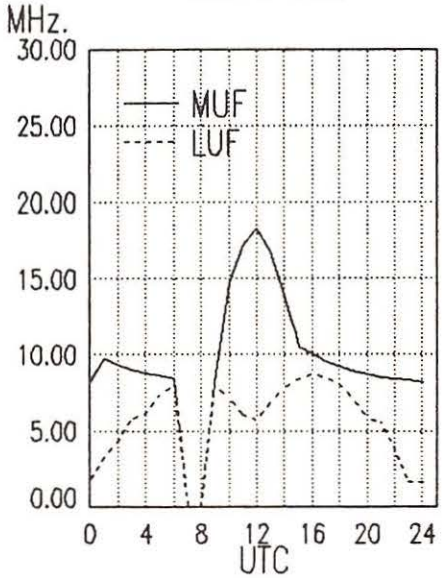
East Coast To
South Africa



East Coast To
Indian Ocean



East Coast To
Central Asia



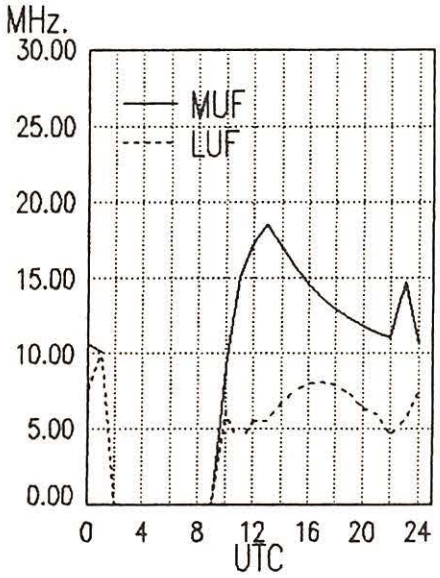
frequency SECTION

0300-0400		CFCN, Calgary, Alberta	6030			
0300-0400		CHNS, Halifax, Nova Scotia	6130			
0300-0400		CKWX, Vancouver, British Colombia	6080			
0300-0400		CFRB, Toronto, Ontario	6070			
0300-0400		(US) Far East Network, Tokyo	3910			
0300-0400		HCJB, Quito, Ecuador	9720	11775	15155	
0300-0400	T-A	KVOH, Rancho Simi, California	13695			
0300-0400		KYOI, Saipan	17780			
0300-0400		La Voz Evangelica, Honduras	4820			
0300-0400		Radio Australia, Melbourne	11945	15160	15240	15320
			15395	17715	17795	
0300-0400		Radio for Peace, Costa Rica	13660			
0300-0400		Radio Havana Cuba	9655	6140	9770	
0300-0400		Radio Prague, Czechoslovakia	5930	6055	7345	9540
			9630	9740	11990	
0300-0400		Radio Thailand, Bangkok	9655	11905		
0300-0400		SBC Radio One, Singapore	5010	5052	11940	
0300-0400		SLBC, Colombo, Sri Lanka	6005	9720	15425	
0300-0400		Trans World Radio, Bonaire	9535			
0300-0400		Voice of America, Washington	6035	7170	7200	7280
			9525	9550	11835	
0300-0400		Voice of Free China, Taiwan	5985	9680		
0300-0400		Voice of Kenya, Nairobi	6045			
0300-0400		Voice of the Mediteranean	9765	ML		
0300-0400		Voice of Nicaragua, Managua	6100			
0300-0400		WCSN, Boston, Massachusetts	9850			
0310-0330		Vatican Radio, Vatican City	6150			
0313-0400		Radio France Int'l, Paris	3965	7135	7175	
			9550	9790	9800	11670
			11700	11995		
0330-0340	S-F	Port Moresby, Papua New Guinea	3925	4890	5960	5985
			6020	6040	6080	6140
			9520			
0330-0400		BBC, London, England	3955	5975	6005	6155
			6195	9410	9915	12095
0330-0400		Radio Berlin Int'l, E. Germany	6125	6165	11750	
0330-0400		Radio Finland, Helsinki	9635	11755		
0330-0400		Radio Tanzania, Dar es Salaam	9684			
0330-0400		Radio Tirana, Albania	7065	9500		
0330-0400		Radio Sweden, Stockholm	11705			
0330-0400		United Arab Emirates Radio	11940	15435	17890	21700
0330-0400	S,M	WINB, Red Lion, Pennsylvania	15145			
0335-0340		All India Radio, New Delhi	3905	4860	9610	11830
			11870	11890	15305	
0335-0400		Radio New Zealand, Wellington	15150	17705		
0340-0350	T-S	Voice of Greece, Athens	7430	9395	9420	
0350-0400		RAI, Rome, Italy	9710	11905	15330	
0350-0400		Radio Yerevan, Armenian SSR	11790	13645	15180	

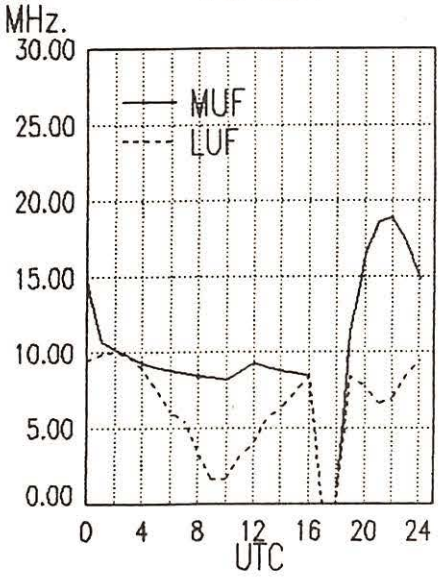
0400 UTC [12:00 AM EDT/9:00 PM PDT]

0400-0405		Radio Uganda, Kampala	4976	5026		
0400-0410		Radio Thailand, Bangkok	9655	11905		
0400-0410		RAI, Rome, Italy	9710	11905	15330	
0400-0415		Radio Berlin Int'l, E. Germany	6125	6165	11750	
0400-0420		Radio Botswana, Gabarone	4820			
0400-0420	T-S	Radio Zambia, Lusaka	3345	6165		
0400-0425		Radio Bucharest, Romania	6155	9510	9570	11830
			11940			
0400-0425		Radio Netherland, Hilversum	9850	13700		
0400-0426		Radio RSA, South Africa	9580	11730		
0400-0430		BBC, London, England	3955	5975	6005	6155
			6195	7120	7160	7185
			9410	9915	12095	15070
			15420			
0400-0430		La Voz Evangelica, Honduras	4820			
0400-0430	M	Radio Norway Int'l, Oslo	9650	11760		
0400-0430		SLBC, Colombo, Sri Lanka	6005	9720	15425	
0400-0430		Radio Tanzania, Dar es Salaam	9684			
0400-0430		Swiss Radio Int'l, Berne	6135	9725	9885	12035
0400-0430		Trans World Radio, Bonaire	9535			
0400-0430	S,M	WINB, Red Lion, Pennsylvania	15145			
0400-0445		Radio Berlin Int'l, E. Germany	9620	11785		
0400-0450		Radio Pyongyang, North Korea	15160	15180		
0400-0450		Voice of Turkey, Ankara	9445	15105		
0400-0455		Radio Beijing, PR China	9645	11980		
0400-0455		RAE, Buenos Aires, Argentina	9690	11710		
0400-0500		(US) Armed Forces Radio and TV	6030	11730	11790	

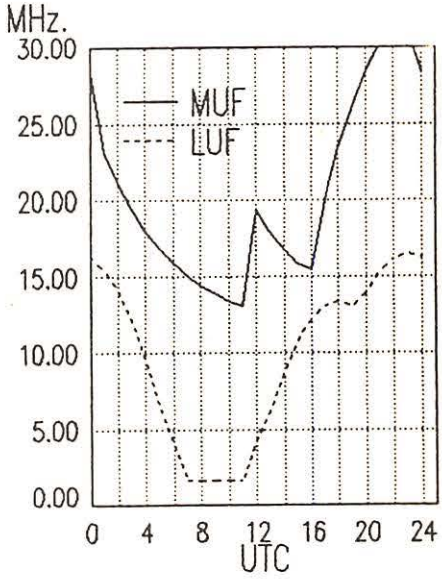
East Coast To
South East Asia



East Coast To
Far East



East Coast To
Pacific



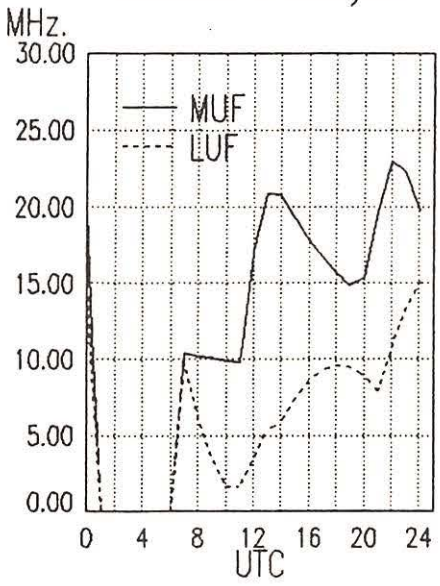
frequency SECTION

0400-0500		CBC Northern Quebec Service	6195	9625		
0400-0500		CBN, St. John's, Newfoundland	6160			
0400-0500		CBU, Vancouver, British Colombia	6160			
0400-0500		CFCF, Montreal, Quebec	6005			
0400-0500		CFCN, Calgary, Alberta	6030			
0400-0500		CHNS, Halifax, Nova Scotia	6130			
0400-0500		CKWX, Vancouver, British Colombia	6080			
0400-0500		CFRB, Toronto, Ontario	6070			
0400-0500		(US) Far East Network, Tokyo	3910			
0400-0500		FEBC, Manila, Philippines	11850			
0400-0500		HCJB, Quito, Ecuador	9720	11775	15155	
0400-0500		KYOI, Saipan	17780			
0400-0500		Radio Australia, Melbourne	11910	11945	15160	15240
			15320	17795		
0400-0500		Radio for Peace, Costa Rica	13660			
0400-0500		Radio Havana Cuba	5965	6035	6140	9655
			9770			
0400-0500		Radio Moscow, USSR	6170	7150	7165	7290
			7390	9600	9765	9890
			11845	12065	13645	13765
			15180	15415	15425	15455
			17850	17860	17880	
0400-0500		Radio New Zealand, Wellington	15150	17705		
0400-0500		Radio Sofia, Bulgaria	7115			
0400-0500		SBC Radio One, Singapore	5010	5052	11940	
0400-0500	T-S	Superpower KUSW, Utah	9815			
0400-0500		Voice of America, Washington	5995	6035	7170	7200
			7280	9525	9575	11835
			11925	15205		
0400-0500		Voice of Kenya, Nairobi	6045			
0400-0500		Voice of the Mediterranean	9765	ML		
0400-0500		WCSN, Boston, Massachusetts	9870			
0400-0500		WHRI, Noblesville, Indiana	7355	7400		
0400-0500		WRNO, New Orleans, Louisiana	6185			
0400-0500		WYFR, Oakland, California	5950	9505	15566	
0425-0440		RAI, Rome, Italy	5980	7275	15330	
0430-0455		Radio Austria Int'l, Vienna	6155	9875	15410	
0430-0500		BBC, London, England	3955	5975	6005	6195
			7120	7185	9410	9510
			9580	11945	12095	15070
			15420			
0430-0500		BBC, London, England*	7210	9750	11945	
0430-0500		Deutsche Welle, West Germany	7150	7225	9565	9765
			11765			
0430-0500		Radio Tirana, Albania	9480	11835		
0430-0500	S,M	Trans World Radio, Bonaire	9535			
0430-0500		Trans World Radio, Swaziland	3205	7205		
0430-0500		Voice of Nigeria, Lagos	7255			
0432-0500	A,M	FEBA, Seychelles	15325	17820	(irr)	
0445-0500		Radio Berlin Int'l, East Germany	9620	11785		

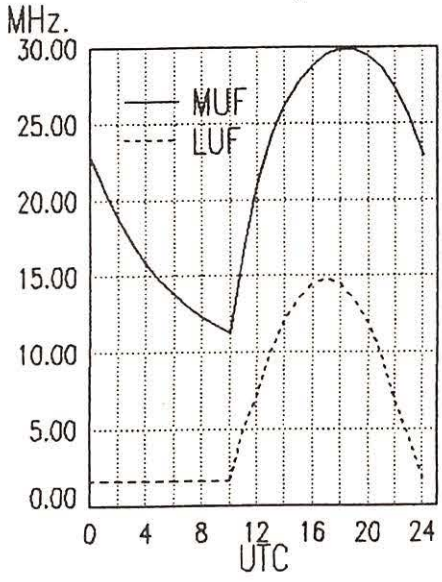
0500 UTC [1:00 AM EDT/10:00 PM PDT]

0500-0510		CBC Northern Quebec Service	6195	9625		
0500-0510		Radio Lesotho, Maseru	4800			
0500-0510	M-A	Radio Zambia, Lusaka	3345	6165		
0500-0515		Deutsche Welle, West Germany	7150	7225	9565	9765
			11765			
0500-0515		GBC, Accra, Ghana	4915			
0500-0515		Vatican Radio, Vatican City	9645	15190		
0500-0530	A	FEBA, Seychelles	15325	17820	(irr)	
0500-0530		Radio Berlin Int'l, East Germany	5965	9620	11785	
0500-0530	M	Radio Norway Int'l, Oslo	11735	15310		
0500-0530	S,M	Trans World Radio, Bonaire	9535			
0500-0530		Trans World Radio, Swaziland	3205	5055	7210	
0500-0550		Deutsche Welle, West Germany	5960	6120	6130	9635
			9700			
0500-0555		Radio Beijing, China	9690			
0500-0600		(US) Armed Forces Radio and TV	6030	11730	11790	
0500-0600		BBC, London, England	5975	5898	6195	7105
			7160	7185	9410	9510
			9580	12095	15420	17120
0500-0600		CBC Northern Quebec Service	6195	9625		
0500-0600		CBU, Vancouver, British Colombia	6160			
0500-0600		CFCF, Montreal, Quebec	6005			
0500-0600		CFCN, Calgary, Alberta	6030			
0500-0600		CHNS, Halifax, Nova Scotia	6130			

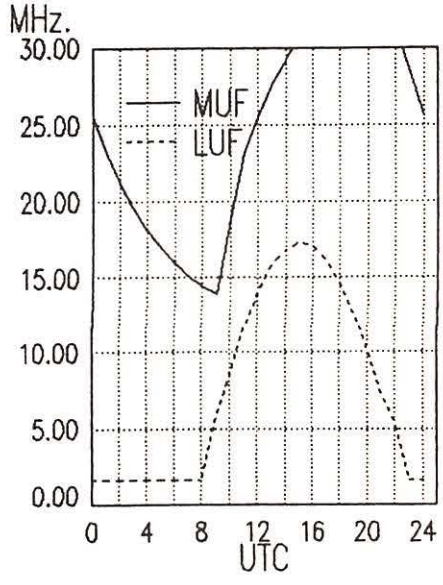
East Coast To
Australia & Malaysia



East Coast To
Central America/Caribbean



East Coast To
South America



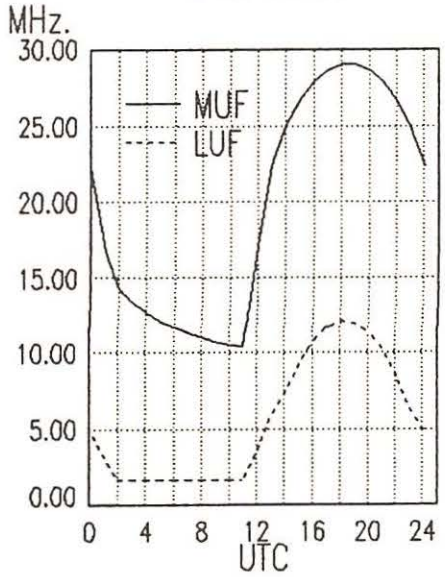
frequency SECTION

0500-0600		CKWX, Vancouver, British Colombia	6080			
0500-0600		CFRB, Toronto, Ontario	6070			
0500-0600		(US) Far East Network, Tokyo	3910			
0500-0600		FEBC, Manila, Philippines	11850			
0500-0600		HCJB, Quito, Ecuador	6230	9720	11775	
0500-0600		KYOI, Saipan	17780			
0500-0600		Radio Australia, Melbourne	11910	15160	15240	17795
0500-0600		Radio for Peace, Cost Rica	13660			
0500-0600		Radio Havana Cuba	5965	6035	9655	9770
0500-0600		Radio Japan, Tokyo	11870	17810		
0500-0600		Radio Kuwait	15345			
0500-0600		Radio Moscow, USSR	7290	7390	9600	9610
			9890	11845	12065	13605
			13645	15320	15465	15500
			15540	17880		
0500-0600		Radio New Zealand, Wellington	15150	17705		
0500-0600		Radio Thailand, Bangkok	9655	11905		
0500-0600	S	Radio Zambia, Lusaka	11880			
0500-0600		SBC Radio One, Singapore	5010	5052	11940	
0500-0600		Spanish Foreign Radio, Madrid	9630			
0500-0600	S	Superpower KUSW, Utah	9815			
0500-0600	S	Swaziland Commercial Radio	6155	9705		
0500-0600		Voice of America, Washington	5995	6035	7170	7280
			9575			
0500-0600		Voice of Kenya, Nairobi	6045			
0500-0600		Voice of the Nediterannean	9765	ML		
0500-0600	IRR	Voice of Nicaragua, Managua	6100			
0500-0600		Voice of Nigeria, Lagos	7255	15120	15185	
0500-0600		WCSN, Boston, Massachusetts	9870			
0500-0600		WINB, Red Lion, Pennsylvania	15145			
0500-0600		WHRI, Noblesville, Indiana	7355	7400		
0500-0600	M-A	WMLK, Bethel, Pennsylvania	9455			
0500-0600		WRNO, New Orleans, Louisiana	6185			
0500-0600		WYFR, Okeechobee, Florida	5950	9520		
0510-0520		Radio Botswana, Gaborone	3356	4820	7255	
0527-0600	F	FEBA, Seychelles	17820			
0530-0545		BBC, London, England*	3990	6050	6140	7210
			9750			
0530-0555		Radio Bucharest, Romania	9640	11840	11940	15340
			15380	17720		
0530-0600		Radio Finland, Helsinki	6120	9670	11715	15185
0530-0600		Radio Netherland, Hilversum	6165	9715		
0530-0600		Radio Tirana, Albania	7300			
0530-0600		Trans World Radio, Swaziland	5055	7210		
0530-0600		UAE RAdio, United Arab Emirates	15435	17775	21700	
0555-0600		Ghana Broadcasting Corp., Accra	4915			
0555-0600		Voice of Malaysia, Kuala Lumpur	6175	9750	15295	

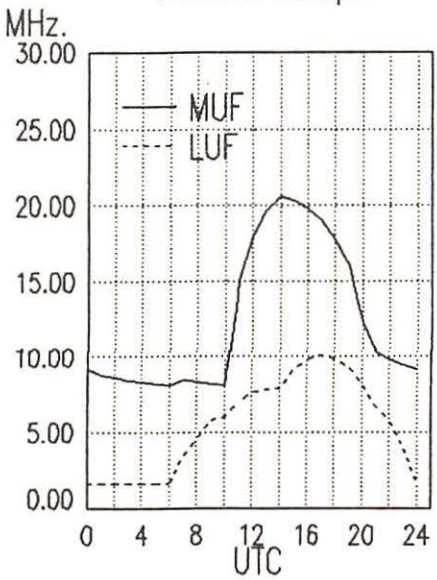
0600 UTC [2:00 AM EDT/11:00 PM PDT]

0600-0615		Kol Israel, Jerusalem	9435	11605	12080	
0600-0615		Radio Ghana, Accra	3366	4915		
0600-0615	M-A	Radio Zambia, Lusaka	6165	7235		
0600-0620		Vatican Radio, Vatican City	6185	9645		
0600-0625		Radio Netherlands, Hilversum	6165	9715		
0600-0630	F	FEBA, Mahe, Seychelles	17820			
0600-0630		Laotian National Radio	7113			
0600-0630		Radio Australia, Melbourne	11910	11945	15160	15240
			15315	15395	15425	17715
			17750			
			17795			
0600-0630		Trans World Radio, Swaziland	6070			
0600-0630		Voice of Kenya, Nairobi	6045			
0600-0645		HCJB, Quito, Ecuador	6230	9720	11775	
0600-0645		Radio Berlin Int'l, East Germany	5965	6115	9645	11810
			13610			
0600-0645	S	Radio Cameroon, Yaounde	4850			
0600-0650		Radio Pyongyang, North Korea	9530	15160	15180	
0600-0700		(US) Armed Forces Radio and TV	6030	11730	11790	
0600-0700		BBC, London, England	5975	6195	7105	7150
			9410	9600	9640	12095
			15070	15280		
0600-0700		CBC Northern Quebec Service	6195			
0600-0700		CBU, Vancouver, British Colombia	6160			
0600-0700		CFCF, Montreal, Quebec	6005			
0600-0700		CFCN, Calgary, Alberta	6030			
0600-0700		CHNS, Halifax, Nova Scotia	6130			
0600-0700		CKWX, Vancouver, British Colombia	6080			

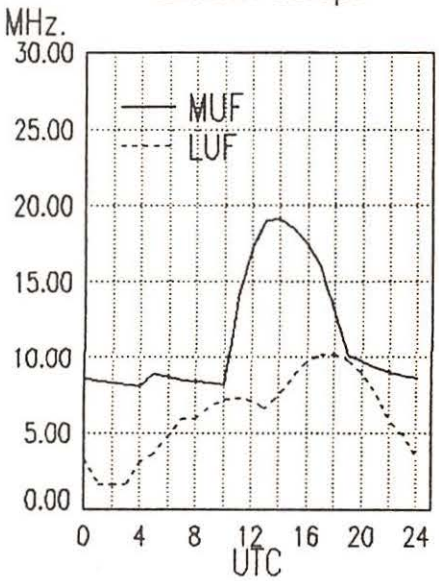
East Coast To
West Coast



Midwest To
Western Europe



Midwest To
Eastern Europe

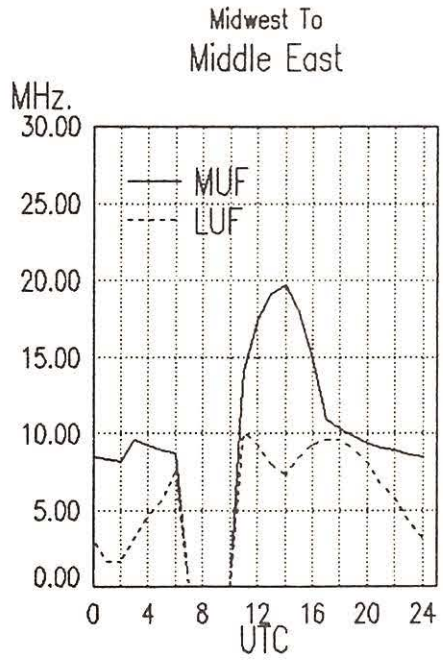


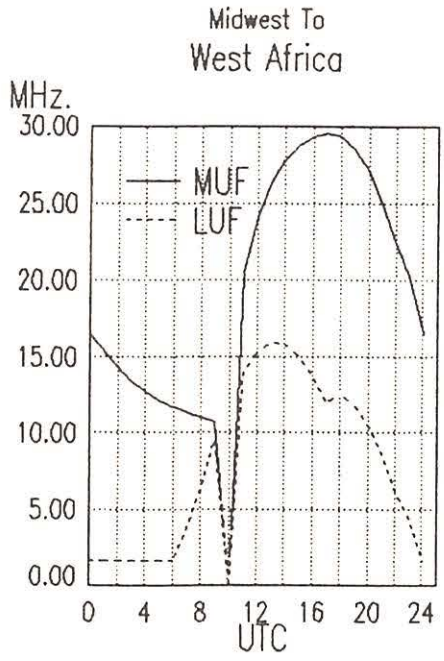
frequency SECTION

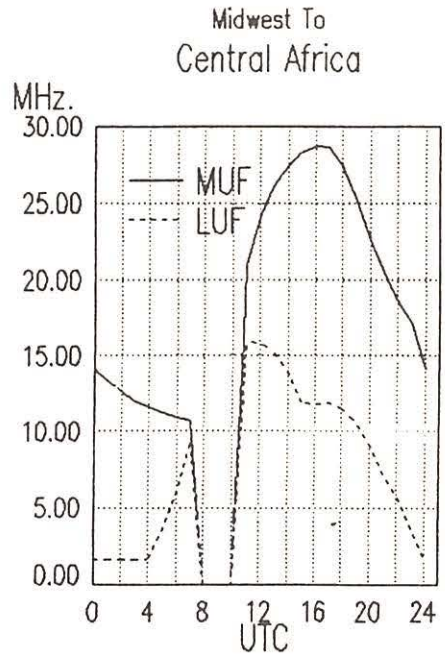
0600-0700		CFRB, Toronto, Ontario	6070			
0600-0700		(US) Far East Network, Tokyo	3910			
0600-0700		King of Hope, South Lebanon	6215			
0600-0700		KYOI, Saipan	17780			
0600-0700		Radio Havana Cuba	9525			
0600-0700		Radio Korea, Seoul, South Korea	6060	7275	9570	
0600-0700		Radio Kuwait	15345			
0600-0700		Radio Moscow, USSR	7150	7195	7200	7290
			7300	7390	9765	11690
			11845	12050	12065	15320
			15500	15540		
0600-0700		Radio New Zealand, Wellington	12045	15150		
0600-0700	A,S	Radio Thailand, Bangkok	9655	11905		
0600-0700	S	Radio Zambia, Lusaka	11880			
0600-0700		SBC Radio One, Singapore	5010	5052	11940	
0600-0700	S	Superpower KUSW, Utah	6155			
0600-0700		Trans World Radio Monte Carlo	7105			
0600-0700		Voice of America, Washington	5995	6035	6080	6095
			6125	7170	7200	7280
			7325	9530	9540	9550
			11915	11925		
0600-0700		Voice of Asia, Taiwan	7285			
0600-0700		Voice of Malaysia, Kuala Lumpur	6175	9750	15295	
0600-0700		Voice of the Mediterranean	9765			
0600-0700		Voice of Nigaria, Lagos	15185			
0600-0700		WCSN, Boston, Massachusetts	9495			
0600-0700		WHRI, Noblesville, Indiana	7365	7400		
0600-0700	M-A	WMLK, Bethel, Pennsylvania	9455			
0600-0700		WRNO, New Orleans, Louisiana	6185			
0600-0700		WYFR, Oakland, California	9705	11580		
0600-0700	T-S	WYFR Satellite Net, California	9520			
0615-0630	M-F	Radio Canada Int'l, Montreal	15245			
0615-0630	M-A	Vatican Radio, Vatican City	15190	17730		
0615-0700		Deutsche Welle, West Germany	11765	13790	15185	17875
0630-0700	A	CPBS-1, China*	11330	15550	15590	17605
0630-0655		Radio Austria Int'l, Vienna	6000	6155	15410	
0630-0655		Radio Netherland, Hilversum	9895	11930		
0630-0700		Radio Australia, Melbourne	11945	15160	15240	15315
			15395	15425	17715	17750
			17795			
0630-0700		Radio Bucharest, Romania	21600			
0630-0700		Radio Polonia, Warsaw, Poland	6135	7270	15120	
0630-0700		Radio Tirana, Albania	7205	9500		
0630-0700		Swiss Radio Int'l, Berne	3985	6165	9535	12030
			15430	17570		
0630-0700		Trans World Radio, Swaziland	5055	6070	7210	9725
0630-0700	A,S	Voice of Kenya, Nairobi	7270			
0645-0700		BBC, London, England*	6150	7260	11945	
0645-0700		HCJB, Quito, Ecuador	6230	9720	11775	
0645-0700		Radio Berlin Int'l, East Germany	15240	17880	21540	21645
0645-0700	M-F	Radio Canada Intl, Montreal	15245			
0645-0700		Radio Ghana, Accra	6130			
			11705	11800		
0645-0700		Radio Bucharest, Romania	11940	15250	15335	17790
			17805	21665		

0700 UTC [3:00 AM EDT/12:00 AM PDT]

0700-0703		Port Moresby, Papua New Guinea	3925	4890	5960	5985
			6020	6040	6080	6140
			9520			
0700-0710		Radio Bucharest, Romania	11940	15250	15335	17790
			17805	21665		
0700-0710		Radio Sierra Leone, Freetown	5980			
0700-0715		Radio Ghana (HS), Accra	3366	4915		
0700-0730		BBC, London, England	5975	6195	7150	9410
			9600	9640	12095	15070
0700-0730		Burma Bcasting Service, Rangoon	9730			
0700-0730		Radio Australia, Melbourne	9655	15160	15240	15395
			17715	17750		
0700-0730		Radio Berlin Int'l, East Germany	15240	17880	21540	21645
0700-0730		Radio Bucharest, Romania	21600			
0700-0730		Radio New Zealand, Wellington	12045	15150		
0700-0730	S	Radio Zambia, Lusaka	11880			
0700-0745		Radio Berlin Int'l, East Germany	5965	11810		
0700-0750		Radio Pyongyang, North Korea	15340	17795		
0700-0800		(US) Armed Forces Radio and TV	15265			
0700-0800		AWR, Forli, Italy	7257			





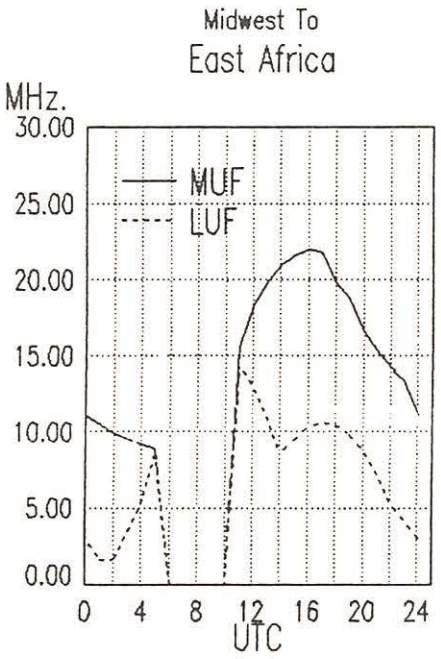


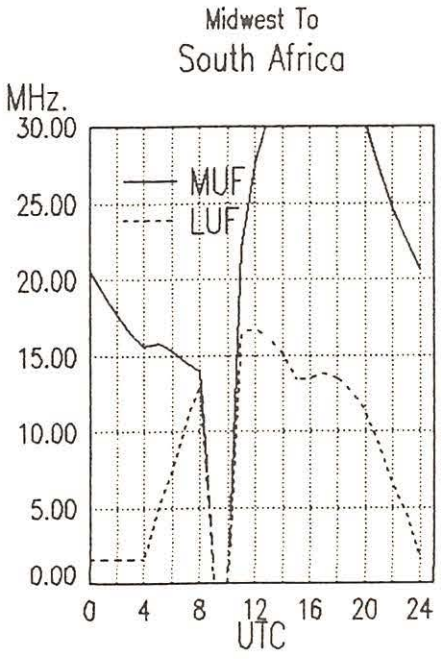
frequency SECTION

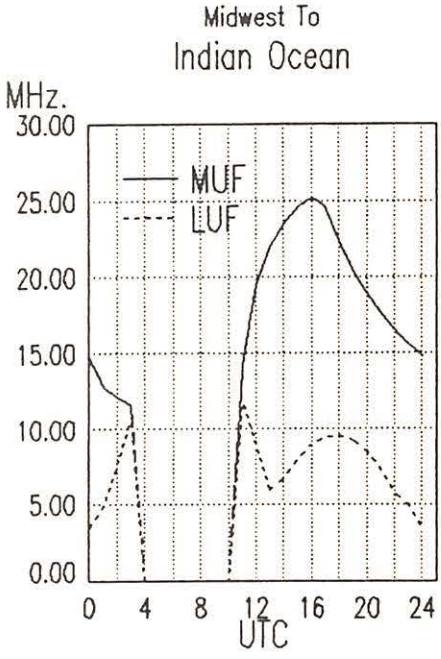
0700-0800		CBU, Vancouver, British Colombia	6130				
0700-0800		CFCF, Montreal, Quebec	6005				
0700-0800		CFCN, Calgary, Alberta	6030				
0700-0800		CHNS, Halifax, Nova Scotia	6130				
0700-0800		CKWX, Vancouver, British Columbia	6080				
0700-0800		CFRB, Toronto, Ontario	6070				
0700-0800		ELWA, Monrovia, Liberia	11830				
0700-0800		(US) Far East Network, Tokyo	3910				
0700-0800		HCJB, Quito, Ecuador	6130	9610	9745	11835	
			11925				
0700-0800		King of Hope, South Lebanon	6215				
0700-0800		KYOI, Saipan	17780				
0700-0800		Radio Ghana, Accra	6130				
0700-0800		Radio Havana Cuba	9525				
0700-0800		Radio Japan, Tokyo	5990	15195	15235	17810	
			21695				
0700-0800		Radio Korea, Seoul, South Korea	6060	7275	9570		
0700-0800		Radio Kuwait	15345				
0700-0800		Radio Moscow, USSR	7290	7300	9580	12010	
			12050	13710	15135	15260	
0700-0800	A,S	Radio Thailand, Bangkok	9655	11905			
0700-0800		SBC-1, Singapore	11940				
0700-0800		Soloman Islands Broadcasting Corp	9545				
0700-0800		Radio Moscow, USSR	7290	7300	9580	12010	
			12050	13710	15135	15260	
0700-0800	S	Superpower KUSW, Utah	6155				
0700-0800		Trans World Radio, Swaziland	6070	9725			
0700-0800		Voice of Free China, Taiwan	5985				
0700-0800	A,S	Voice of Kenya, Nairobi	7270				
0700-0800		Voice of Malaysia, Kuala Lumpur	6175	9750	15295		
0700-0800		Voice of the Mediterranean	9765	ML			
0700-0800		Voice of Nigeria, Lagos	15120	15185			
0700-0800		WCSN, Boston, Massachusetts	9495				
0700-0800		WHRI, Noblesville, Indiana	7365	7400			
0700-0800	M-A	WMLK, Bethel, Pennsyvlania	9455				
0700-0800		WYFR, Oakland, California	7355	9520	9852.5		
0715-0730		Radio Korea, Seoul, South Korea	13670	15575			
0715-0730	M-A	Vatican Radio, Vatican City	11725	15190			
0715-0735	S	FEBA, Mahe, Seychelles	15115	17785			
0720-0730	M-A	Vatican Radio, Vatican City	6248	9645	11740		
0725-0800		Trans World Radio, Monte Carlo	7105				
0730-0800		ABC, Alice Springs, Australia	2310	[ML]			
0730-0800		ABC, Katherine, Australia	2485				
0730-0800		ABC, Tennant Creek, Australia	2325	[ML]			
0730-0800		Radio Australia, Melbourne	9655	11720			
0730-0800		Radio Finland, Helsinki	6120	9560	11755	15270	
0730-0735		All India Radio, New Delhi	5990	6010	6020	7110	
			7205	9610	9675	11850	
			11935	15235	15250	17705	
0730-0745		BBC, London, England*	3975	6010	7230	9915	
0730-0800		BBC, London, England	9600	9640	11955	15360	
0730-0800		Radio Netherland, Hilversum	9630	9715			
0730-0800		Radio Prague, Czechoslovakia	11685	17840	21705		
0730-0800		Swiss Radio Int'l, Berne	3985	6165	9535		
0740-0750	W	Radio Free Europe, Munich*	5985	7115	9695	9725	
			11895	15355			
0745-0800	M-F	Radio Canada Int'l, Montreal	6050	6140	7155	9740	
			9760	11840	15235		
0745-0800		Radio Prague, Czechoslovakia	6055	7345	9505		

0800 UTC [4:00 AM EDT/1:00 AM PDT]

0800-0805	M-F	Port Moresby, Papua New Guinea	3925	4890	5960	5985	
			6020	6040	6080	6140	
			9520				
0800-0805		Soloman Islands Broadcasting Corp	9545				
0800-0815	M-A	Radio Zambia, Lusaka	6165	7235			
0800-0825		Radio Netherland, Hilversum	9630	9715			
0800-0825		Voice of Malaysia, Kuala Lumpur	6175	9750	15295		
0800-0830		HCJB, Quito, Ecuador	6130	9610	9745	11835	
			11925				
0800-0830		Radio Bangladesh, Dhaka	12030	15525			
0800-0830		Radio Tirana, Albania	9500	11835			
0800-0830		Voice of Islam, Pakistan	15525	17870			
0800-0835	S	FEBA, Mahe, Seychelles	15325,	17785			
0800-0835		Trans World Radio, Swaziland	6070	9725			
0800-0845		WYFR, Oakland, California	6065	7355	9852.5		
0800-0850		Radio Pyongyang, North Korea	9530	11830	15160	15180	





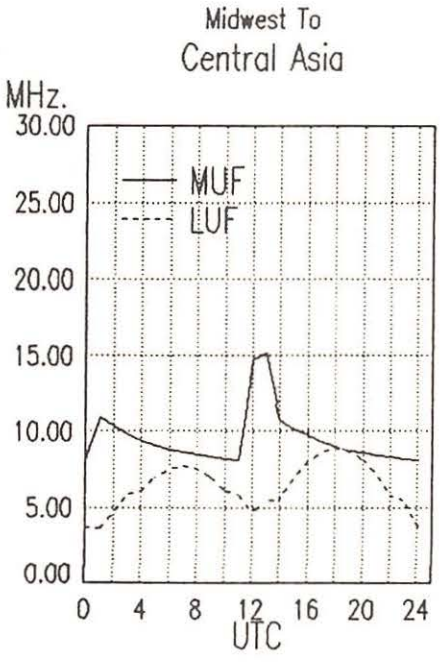


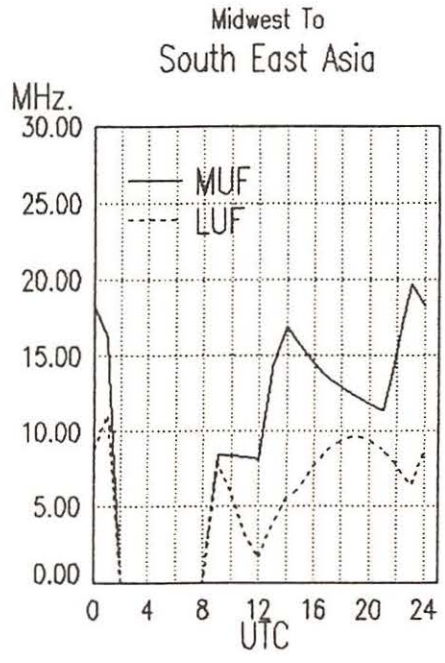
frequency SECTION

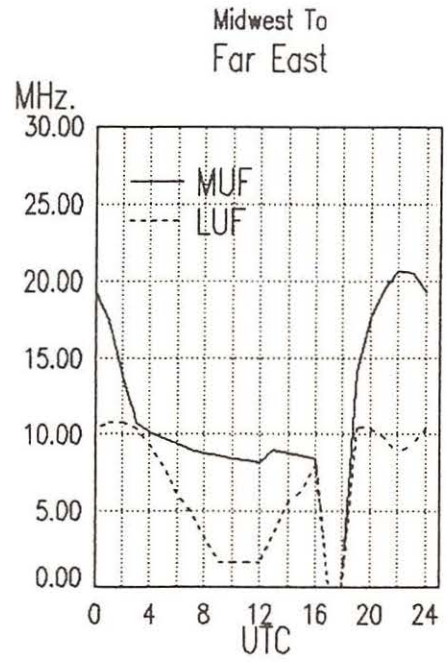
0800-0900		ABC, Alice Springs, Australia	2310	[ML]		
0800-0900		ABC, Katherine, Australia	2485			
0800-0900		ABC, Tennant Creek, Australia	2325	[ML]		
0800-0900		BBC, London, England	9410	9640	11860	12095
			15070	15360	15400	
0800-0900		CBN, St. John's, Newfoundland	6160			
0800-0900		CBU, Vancouver, British Colombia	6160			
0800-0900		CFCF, Montreal, Quebec	6005			
0800-0900		CFCN, Calgary, Alberta	6030			
0800-0900		CHNS, Halifax, Nova Scotia	6130			
0800-0900		CKWX, Vancouver, British Colombia	6080			
0800-0900		CFRB, Toronto, Ontario	6070			
0800-0900		(US) Far East Network, Tokyo	3910			
0800-0900		King of Hope, South Lebanon	6215			
0800-0900		KNLS, Anchor Point, Alaska	6150			
0800-0900		KTWR, Guam	11805			
0800-0900		KYOI, Saipan	11900			
0800-0900		Radio Australia, Melbourne	5995	6080	9580	9655
			9710	11720		
0800-0900		Radio Moscow, USSR	7290	11845	13680	13710
			15135	15460	17685	17850
			17880			
0800-0900		Radio for Peace, Costa Rica	13660			
0800-0900		SBC Radio One, Singapore	5010	5052	11940	
0800-0900	S	Superpower KUSW, Utah	6135			
0800-0900		Trans World Radio, Monte Carlo	7105			
0800-0900		Voice of Indonesia, Jakarta	11790	15105		
0800-0900	A,S	Voice of Kenya, Nairobi	7270			
0800-0900		Voice of Nigaria, Lagos	7255	15185		
0800-0900		WHRI, Noblesville, Indiana	7365	9620		
0800-0900		WYFR, Oakland, California	6065	7365	9620	11580
0815-0830	S	Radio Austria Int'l, Vienna	6155	11915	15410	15415
			17870			
0815-0845	M-F	Voice of America, Washington DC	7175	9575	9750	11710
			11915	15600	17715	21500
			[ML]			
0815-0900	A,S	Radio Berlin Int'l, East Germany	6040	7185	9730	21465
			21540			
0830-0840		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7160	7250
			7280	7295	9610	11850
			15235	15250	17705	
0830-0855		Radio Austria Int'l, Vienna	6155	11915	15410	15415
0830-0855	M-A	Radio Netherland, Hilversum	9630			
0830-0900	S	Bhutan Bcasting Service, Thimpu	6035			
0830-0900		FEBC, Manila, Philippines	11850	15350		
0830-0900		HCJB, Quito, Ecuador	6130	9745	11925	
0830-0900		Radio Beijing, China	9700	11755	15440	
0830-0855		Radio Finland, Helsinki	6120	9560	11755	
0830-0900		Radio Netherland, Hilversum	9630	21486		
0830-0900		Radio Prague, Czechoslovakia	11685	17840	21705	
0830-0900		Radio Sofia, Bulgaria	9700	11720		
0830-0900		Swiss Radio Int'l, Berne	9560	9885	13685	17830
			21695			
0830-0900		Voice of Nigeria, Lagos	15120			
0840-0850	M-A	Voice of Greece, Athens	9855	15630		
0845-0900		Radio Prague, Czechoslovakia	6055	7345	9505	
0850-0900		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7150	7160
			7250	7280	7295	9610
			11850	15235	15250	17705

0900 UTC [5:00 AM EDT/2:00 AM PDT]

0900-0905		Africa No. 1, Gabon	7200	15200		
0900-0910		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7150	7160
			7250	7280	7295	9610
			11850	15235	15250	17705
0900-0910		Port Moresby, Papua New Guinea	3295	4890	5960	5985
			6020	6040	6080	6140
			9520			
0900-0910		Voice of Lebanon, Beirut	6548			
0900-0925	M-F	BRT, Brussels, Belgium	11695	15510		
0900-0930		FEBC, Manila, Philippines	11850	15350		







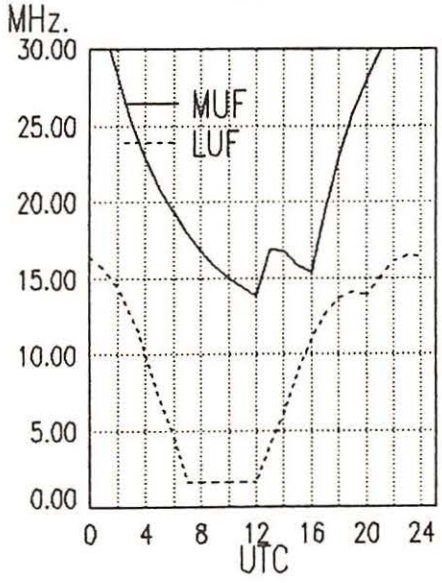
frequency SECTION

0900-0930		KTWR, Agana, Guam	11805			
0900-0930		Nippon Broadcasting Corp.	3925			
0900-0930		Radio Beijing, China	9700	11755	15440	
0900-0930		Radio Netherland, Hilversum	9630	21485		
0900-0930	A,S	Radio Prague, Czechoslovakia	11685	17840	21705	
0900-0950		Deutsche Welle, West Germany	9720	15510	17780	21650
			21680			
0900-1000		ABC, Alice Springs, Australia	2310	[ML]		
0900-1000		ABC, Katherine, Australia	2485			
0900-1000		ABC, Tennant Creek, Australia	2325	[ML]		
0900-1000	S	Adventist World Radio, Portugal	9670			
0900-1000		(US) Armed Forces Radio and TV	6030	9530	9565	
0900-1000		BBC, London, England	9410	9740	9750	11750
			11860	11955	12095	15070
			15400	15360	17790	18080
0900-1000		CFCF, Montreal, Quebec	6005			
0900-1000		CFCN, Calgary, Alberta	6030			
0900-1000		CHNS, Halifax, Nova Scotia	6130			
0900-1000		CKWX, Vancouver, British Colombia	6080			
0900-1000		CFRB, Toronto, Ontario	6070			
0900-1000		(US) Far East Network, Tokyo	3910			
0900-1000		HCJB, Quito, Ecuador	6130	9745	11925	
0900-1000		King of Hope, South Lebanon	6215			
0900-1000		KNLS, Anchor Point, Alaska	6150			
0900-1000		KYOI, Saipan	11900			
0900-1000		Radio Afghanistan, Kabul	4450	6085	15435	17720
0900-1000		Radio Australia, Melbourne	5995	6080	9580	9655
			9710	9760	11720	15415
0900-1000		Radio Japan, Tokyo	11885			
0900-1000		Radio Korea, Seoul, South Korea	7550	13670		
0900-1000		Radio Moscow, USSR	12055	13710	15135	15295
			15460	17880		
0900-1000		Radio for Peace, Costa Rica	135660			
0900-1000	S	Radio Prague, Czechoslovakia	6055	7345	9505	[ML]
0900-1000		Radio Tanzania, Dar es Salaam	7165			
0900-1000		SBC Radio One, Singapore	5010	5052	11940	
0900-1000	S	Superpower KUSW, Utah	6135			
0900-1000		Trans World Radio, Monte Carlo	7105			
0900-1000		Voice of Kenya, Nairobi	7270			
0900-1000		Voice of Nigeria, Lagos	7255	15120	15185	
0900-1000		WHRI, Noblesville, Indiana	7355	9510		
0900-1000		WYFR, Oakland, California	11580	15495		
0915-0930		Radio Korea, Seoul, South Korea	9570			
0915-0950	M-A	Radio Ulan Bator, Mongolia	9615	12015		
0930-0935		All India Radio, New Delhi	5960	5990	6010	6020
			6050	6065	6100	6140
			7110	7140	7160	7250
			7280	7295	9610	11850
			15235	15250	17705	
0930-0945		BBC, London, England*	9725	11955		
0930-1000		CBN, St. John's, Newfoundland	6160			
0930-1000		KTWR, Guam	11805			
0930-1000		Radio Beijing, China	9700	11755	15440	
0930-1000		Radio Finland, Helsinki	15245	17795		
0930-1000		Radio Sweden Int'l, Stockholm	15390			
0945-1000		BBC, London, England*	5995	7180	9725	11955
0945-1000	M-A	Radio Prague, Czechoslovakia	6055	7345	9505	

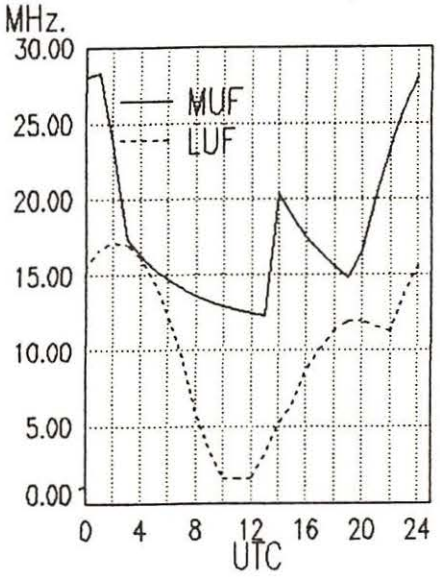
1000 UTC [6:00 AM EDT/3:00 AM PDT]

1000-1030		Deutsche Welle, West Germany	9735	11785	17765	21600
1000-1030		HCJB, Quito, Ecuador	6130	9745	11925	
1000-1030		Radio Afghanistan, Kabul	4450	6085	15435	17720
1000-1030		Radio Beijing, China	9700	11755	15440	
1000-1030	S	Radio Norway Int'l, Oslo	21705			
1000-1030		Radio Tanzania, Dar es Salaam	7165			
1000-1030		Swiss Radio Int'l, Berne	9560	9885	13685	17830
			21695			
1000-1030		Voice of Ethiopia, Addis Ababa	9560			
1000-1030		Voice of Vietnam, Hanoi	12020	15010		
1000-1045		Radio Berlin Int'l, East Germany	9665	21465	21540	
1000-1055	A	Trans World Radio, Monte Carlo	7105			
1000-1100		ABC, Alice Springs, Australia	2310	[ML]		
1000-1100		ABC, Katherine, Australia	2485			
1000-1100		ABC, Perth, Australia	9610			
1000-1100		ABC, Tennant Creek, Australia	2325	[ML]		
1000-1100		(US) Armed Forces Radio and TV	6030	9530	9700	
1000-1100		All India Radio, New Delhi	11860	11915	15130	15335

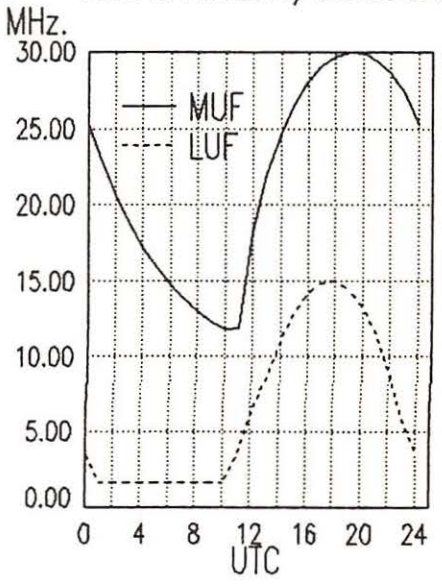
Midwest To
Pacific



Midwest To
Australia & Malaysia



Midwest To
Central America/Caribbean

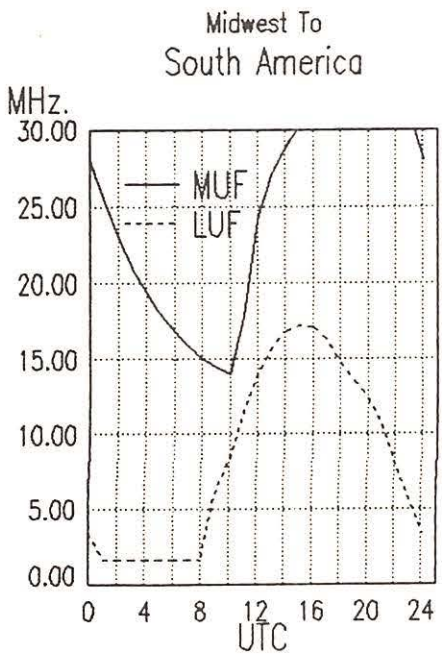


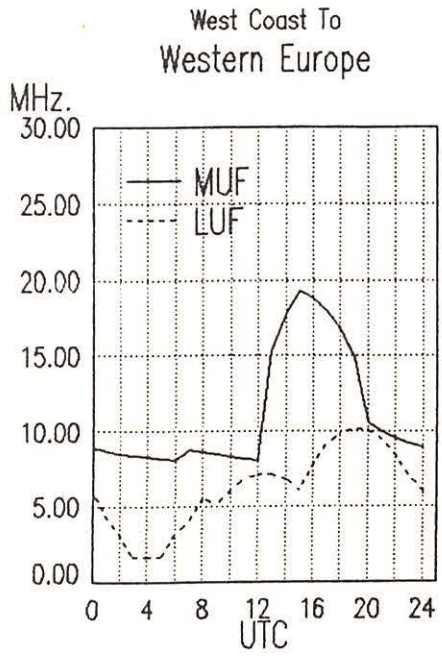
frequency SECTION

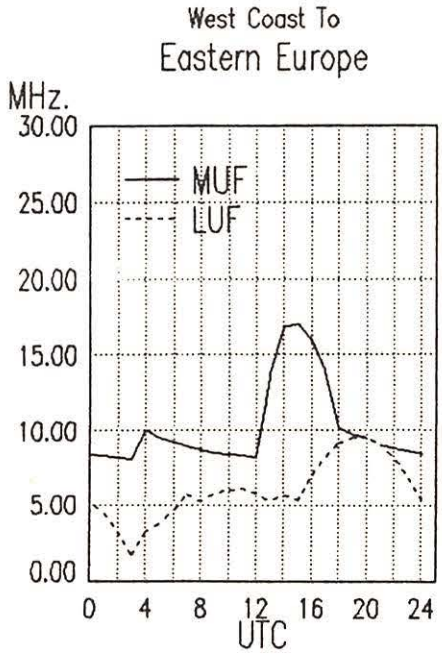
			17387	11785			
1000-1100		BBC, London, England	9740	9750	11750	12095	
			15070	15400	17705	17790	
			18080				
1000-1100		CBN, St. John's, Newfoundland	6160				
1000-1100		CFCF, Montreal, Quebec	6005				
1000-1100		CFCN, Calgary, Alberta	6030				
1000-1100		CHNS, Halifax, Nova Scotia	6130				
1000-1100		CKWX, Vancouver, British Colombia	6080				
1000-1100		CFRB, Toronto, Ontario	6070				
1000-1100		(US) Far East Network, Tokyo	3910				
1000-1100		KTWR, Agana, Guam	11805				
1000-1100		KYOI, Saipan	11900				
1000-1100		Radio Afghanistan, Kabul	15435	17720			
1000-1100		Radio Australia, Melbourne	9580	9770	15415		
1000-1100		Radio Moscow, USSR	15135	15460	17880		
1000-1100		Radio New Zealand, Wellington	6100	9540			
1000-1100	S	Radio Prague, Czechoslovakia	6055	7345	9505	[ML]	
1000-1100		SBC Radio One, Singapore	5010	5052	11940		
1000-1100	S	Superpower KUSW, Utah	6135				
1000-1100		Voice of America, Washington	5975	5985	6165	9590	
1000-1100		Voice of Kenya, Nairobi	7270				
1000-1100		Voice of Nigeria, Lagos	7255	15120			
1000-1100		WHRI, Noblesville, Indiana	7355	9510			
1000-1100		WYFR, Oakland, California	5950				
1005-1010		Radio Pakistan, Islamabad	15606	17660			
1030-1040		Voice of Asia, Taiwan	5980				
1030-1100		BBC, London, England*	7180	9660	9725		
1030-1100		HCJB, Quito, Ecuador	6130	11925			
1030-1040	M-F	Radio Canada Int'l, Montreal	5960	9755			
1030-1100		Radio Netherlands, Hilversum	6020	9675			
1030-1100	A,S	Radio Tanzania, Dar es Salaam	7165				
1030-1100		SLBC, Colombo, Sri Lanka	11835	15120	17850	[ML]	
1030-1100		UAE Radio, United Arab Emirates	15435	17865	21605		
1030-1100		Voice of America, Washington*	11965				
1040-1050	H	Radio Free Europe, Munich*	5985	7115	9695	9725	
			11895	15355			
1040-1050	M-A	Voice of Greece, Athens	11645	15630			
1045-1100	S	Radio Budapest, Hungary	7220	9585	9835	11910	
			15160	15220			
1045-1100	M-A	Radio Prague, Czechoslovakia	6055	7345	9505		
1055-1100	S	Trans World Radio, Monte Carlo	7105				

1100 UTC [7:00 AM EDT/4:00 AM PDT]

1100-1105		Radio Pakistan, Islamabad	6090	7290			
1100-1105	A	Port Moresby, Papua New Guinea	3295	4890	5960	5985	
			6020	6040	6080	6140	
			9520				
1100-1110	S	Port Moresby, Papua New Guinea	3295	4890	5960	5985	
			6020	6040	6080	6140	
			9520				
1100-1115		Radio New Zealand, Wellington	6100	9540			
1100-1120		Radio Pakistan, Islamabad	15606	17760			
1100-1125		Radio Netherland, Hilversum	6020	9675			
1100-1130		BBC, London, England*	7120				
1100-1130		HCJB, Quito, Ecuador	6130	11925			
1100-1130		Kol Israel, Jerusalem	9385	11700	15485	15640	
			15650	17635	17685	21625	
1100-1130		KTWR, Guam	9820	11665			
1100-1130		Radio Japan, Tokyo	5990	6120	7210	17810	
1100-1130		Radio Mozambique, Maputo	9525	11818	11835		
1100-1130		Radio Sweden Int'l, Stockholm	6065	9630	21690		
1100-1130		SLBC, Colombo, Sri Lanka	11835	15120	17850	[ML]	
1100-1130		Swiss Radio Int'l, Berne	13685	15570	17830		
1100-1130		Voice of Vietnam, Hanoi	7430	9732			
1100-1150		Radio Pyongyang, North Korea	6576	9600	11735		
1100-1155		Radio Beijing, China	15455				
1100-1200		ABC, Alice Springs, Australia	2310	[ML]			
1100-1200		ABC, Katherine, Australia	2485				
1100-1200		ABC, Perth, Australia	9610				
1100-1200		ABC, Tennant Creek, Australia	2325	[ML]			
1100-1200		(US) Armed Forces Radio and TV	6030	9700	15430		
1100-1200		BBC, London, England	5965	6195	9510	9740	
			11750	11775	12095	15070	
			15400	15430	17790	18080	
1100-1200		CBN, St. John's, Newfoundland	6160				
1100-1200		CFCF, Montreal, Quebec	6005				







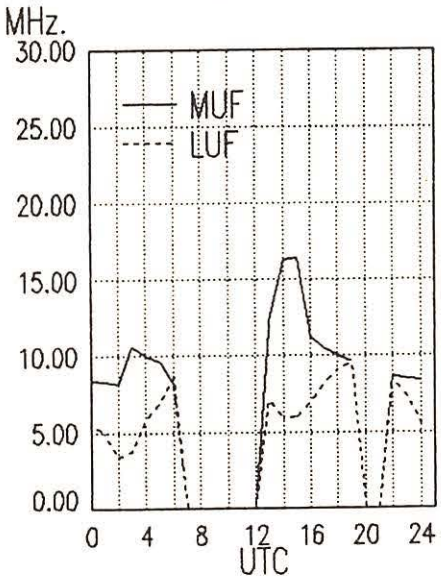
frequency SECTION

1100-1200		CFCN, Calgary, Alberta	6030				
1100-1200		CHNS, Halifax, Nova Scotia	6130				
1100-1200		CKWX, Vancouver, British Colombia	6080				
1100-1200		CFRB, Toronto, Ontario	6070				
1100-1200		(US) Far East Network, Tokyo	3910				
1100-1200		KYOI, Saipan	11900				
1100-1200		Radio Australia, Melbourne	5995	7215	9580	9645	
			9710	9770	11705	11800	
1100-1200		Radio Moscow, USSR	9600	13710	15405	15460	
			15335	15500	15550		
1100-1200		Radio RSA, South Africa	21590				
1100-1200	A,S	Radio Tanzania, Dar es Salaam	7165				
1100-1200	S	Radio Zambia, Lusaka	11880	[IRR]			
1100-1200	S	Superpower KUSW, Utah	6135				
1100-1200		Voice of America, Washington	5975	5985	6165	9590	
			9760	11715	15160	15425	
1100-1200		Voice of Asia, Taiwan	5980	7445			
1100-1200		Voice of Kenya, Nairobi	7270				
1100-1200		Voice of Nigeria, Lagos	7255	15120			
1100-1200		WHRI, Noblesville, Indiana	7355	9510			
1110-1120	M-F	Radio Botswana, Gaborone	4820	5955	7255		
1115-1130		Radio Korea, Seoul, South Korea	11740				
1115-1130		Vatican Radio, Vatican City	17840	21485			
1115-1145		Radio Nepal, Kathmandu	5005				
1115-1200		Trans World Radio, Bonaire	11815	15345			
1130-1145	A	Radio Budapest, Hungary	7220	9585	9835	11910	
			15160	15220			
1130-1157		Radio Austria Int'l, Vienna	13730	15320			
1130-1200		Deutsche Welle, West Germany	15410	21600			
1130-1200		HCJB, Quito, Ecuador	11740				
1130-1200		Radio Japan, Tokyo	5990	6120	7210		
1130-1200		Radio Netherland, Hilversum	5995	9715	15560	17575	
			17605	21480			
1130-1200		Radio Thailand, Bangkok	9655	11905			
1130-1200		Radio Tirana, Albania	9480	11855			
1130-1200		Voice of Islamic Republic Iran	11790				
1135-1140		All India Radio, New Delhi	6065	7110	9610	9675	
			11850	15320			
1140-1145	M-A	Vatican Radio, Vatican City	6248	9645	11740		
1145-1200		BBC, London, England*	5995	7180			
1145-1200		Radio Bangladesh, Dakha	15255	17740			
1145-1200		Radio Prague, Czechoslovakia	6055	7345	9505		

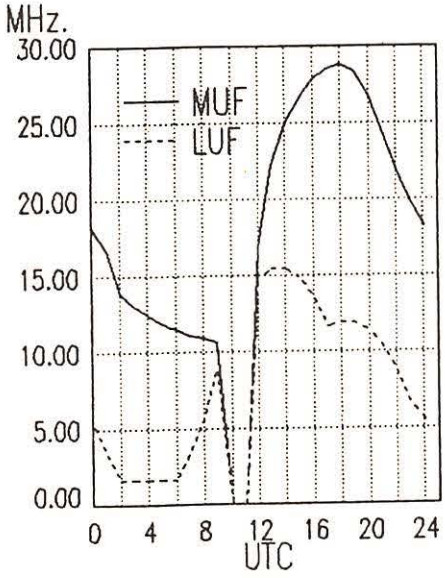
1200 UTC [8:00 AM EDT/5:00 AM PDT]

1200-1205	M-A	Port Moresby, Papua New Guinea	3295	4890	5960	6020	
			6040	6080	6140	9520	
1200-1215		BBC, London, England*	3915	6065	7275		
1200-1215		Radio New Zealand, Wellington	6100	9540			
1200-1215		Vatican Radio, Vatican City	15190	17865			
1200-1215		Voice of Kampuchea, Phnom-Penh	9693	11938			
1200-1220		Radio Bucharest, Romania	17720	21665			
1200-1225		Radio Polonia, Warsaw, Poland	6095	7285			
1200-1230		KFBS Saipan	9830	12025			
1200-1230	S	Radio Austria Int'l, Vienna	6155	9685	11915	15320	
1200-1230		Radio Finland	11945	15400			
1200-1230		Radio Netherland, Hilversum	9715	15560	17575	17605	
			21480				
1200-1230		Radio Somalia, Mogadishu	6095				
1200-1230		Radio Tashkent, Uzbek, USSR	5945	7275	9540	9600	
			11785				
1200-1230		Radio Thailand, Bangkok	9655	11905			
1200-1230	S	Radio Zambia, Lusaka	11880	[IRR]			
1200-1235	M-A	Radio Ulan Bator, Mongolia	9615	12015			
1200-1236		HCJB, Quito, Ecuador	6075				
1200-1250		Radio Pyongyang, North Korea	9600	9555	11735		
1200-1255		Radio Beijing, China	7335	9530	9635	9665	
			9770	11600	11715	15455	
1200-1300		ABC, Alice Springs, Australia	2310	[ML]			
1200-1300		ABC, Katherine, Australia	2485				
1200-1300		ABC, Tennant Creek, Australia	2325	[ML]			
1200-1300	S	Adventist World Radio, Africa	17890				
1200-1300		(US) Armed Forces Radio and TV	6030	9700	15430		
1200-1300		BBC, London, England	9510	15070	17705	17790	
			18080				
1200-1300		CBN, St. John's, Newfoundland	6160				
1200-1300		CFCF, Montreal, Quebec	6005				
1200-1300		CFCN, Calgary, Alberta	6030				

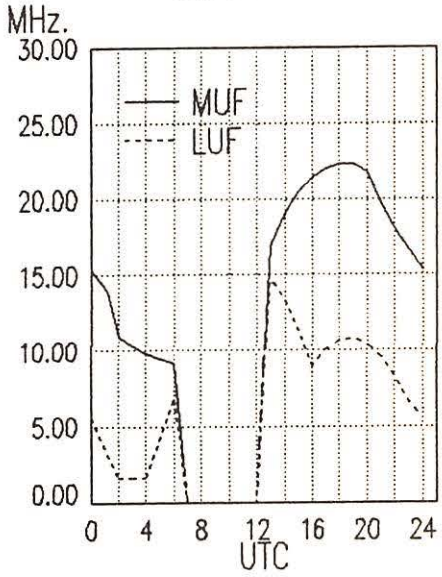
West Coast To
Middle East



West Coast To
West Africa



West Coast To
Central Africa

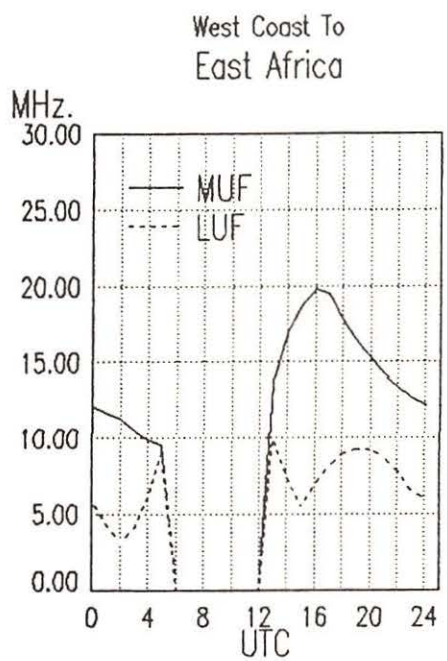


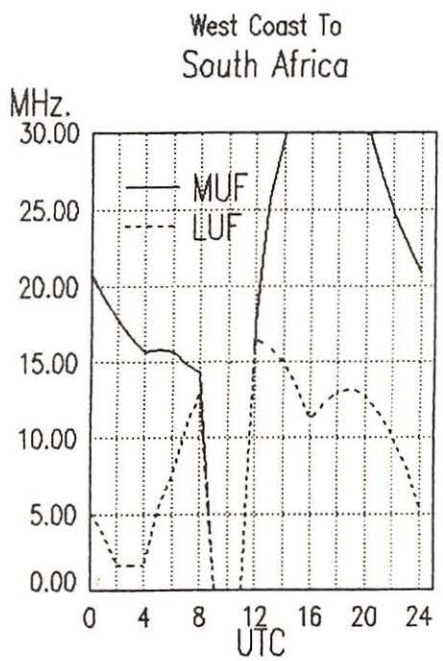
frequency SECTION

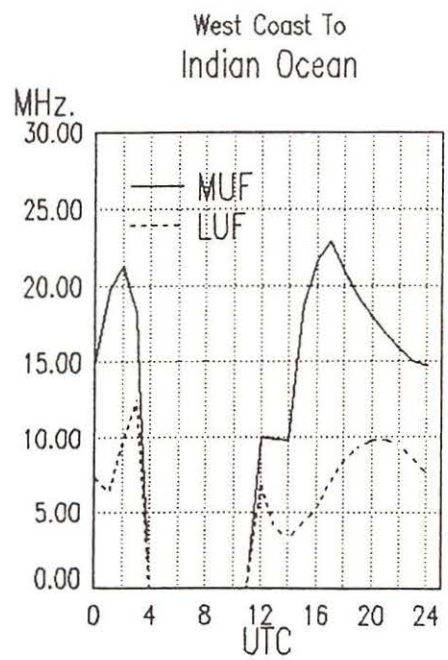
1200-1300		CHNS, Halifax, Nova Scotia	6130			
1200-1300		CKWX, Vancouver, British Colombia	6080			
1200-1300		CFRB, Toronto, Ontario	6070			
1200-1300		(US) Far East Network, Tokyo	3910			
1200-1300		HCJB, Quito, Ecuador	11740	15115	17890	
1200-1300		KYOI, Saipan	11900			
1200-1300		Radio Australia, Melbourne	6060	6080	7205	7215
			9580	9710	9770	11800
1200-1300		Radio Korea, Seoul, South Korea	15575			
1200-1300		Radio Moscow, USSR	9600	9795	13710	15460
			15500	17595		
1200-1300		Radio RSA, South Africa	21590			
1200-1300	A,S	Radio Tanzania, Dar es Salaam	7165			
1200-1300		SBC Radio One, Singapore	5010	5052	11940	
1200-1300	S	Superpower KUSW, Utah	9850			
1200-1300		Swiss Radio Int'l, Bern	12030			
1200-1300		Trans World Radio, Bonaire	11815	15345		
1200-1300		Trans World Radio, Sri Lanka	11920			
1200-1300		Voice of America, Washington	9760	11715	15160	15425
1200-1300		Voice of Kenya, Nairobi	7270			
1200-1300		Voice of Nigeria, Lagos	7255	15120		
1200-1300		WCSN, Boston, Massachusetts	5980			
1200-1300		WHRI, Noblesville, Indiana	5995	11790		
1200-1300		WYFR, Oakland, California	5950	7355		
1215-1245		Radio Korea, Seoul, South Korea	7275	11740		
1215-1300		Radio Berlin Int'l, East Germany	15445	17775		
1215-1300		Radio Cairo, Egypt	17595	17675		
1230-1235		All India Radio, New Delhi	3905	4800	4920	7280
			9565	9615	11620	11735
			15120			
1230-1300		BBC, London, England*	6125	7255	6195	9635
			9660	11780	12040	15270
			15390	15435	17695	
1230-1300		Radio Bangladesh, Dhaka	15195	17710		
1230-1300		Radio Sweden, Stockholm	15190	15430		
1240-1250	M	Radio Free Europe, Munich*	5985	7115	9695	9725
			11895	15355		
1245-1255		Radio France Int'l, Paris	11670	17720		

1300 UTC [9:00 AM EDT/6:00 AM PDT]

1300-1305		Port Moresby, Papua New Guinea	3295	4890	5960	5980
			6020	6040	6080	6140
			9520			
1300-1325		Radio Bucharest, Romania	9690	11940	15405	17720
1300-1325	M-F	Radio Finland, Helsinki	11945	15400		
1300-1330		BBC, London, England	9510	11775	15070	17790
1305-1330	S	Radio Austria Int'l, Vienna	15320			
1300-1330		Radio Cairo, Egypt	17595			
1300-1330		Radio Canada Int'l, Montreal	9625	11855	17820	
1300-1330		Radio Ghana, Accra	4915	7295		
1300-1330	S	Radio Norway Int'l, Oslo	15310			
1300-1330		Swiss Radio Int'l, Berne	11965			
1300-1330		Trans World Radio, Sri Lanka	11920			
1300-1330		Voice of Kenya, Nairobi	7270			
1300-1332	A,S	Trans World Radio, Bonaire	11815	15345		
1300-1350		Radio Pyongyang, North Korea	9325	9345	9555	9600
			11735			
1300-1355		Radio Beijing, China	11600	11755	15280	15455
1300-1400		ABC, Alice Springs, Australia	2310	[ML]		
1300-1400		ABC, Katherine, Australia	2485			
1300-1400		ABC, Tennant Creek, Australia	2325	[ML]		
1300-1400		(US) Armed Forces Radio and TV	9700	15330	15430	
1300-1400		CBC Northern Quebec Service	9625	11720		
1300-1400		CBN, St. John's, Newfoundland	6160			
1300-1400		CBU, Vancouver, British Colombia	6160			
1300-1400		CFCF, Montreal, Quebec	6005			
1300-1400		CFCN, Calgary, Alberta	6030			
1300-1400		CHNS, Halifax, Nova Scotia	6130			
1300-1400		CKWX, Vancouver, British Colombia	6080			
1300-1400		CFRB, Toronto, Ontario	6070			
1300-1400	S	ELWA, Monrovia, Liberia	11830			
1300-1400		(US) Far East Network, Tokyo	3910			
1300-1400		FEBC, Manila, Philippines	11850			
1300-1400		HCJB, Quito, Ecuador	11740	15115	17890	
1300-1400	M-A	KYOI, Saipan	11900			
1300-1400		Radio Australia, Melbourne	5995	6060	6080	7205
			9580			





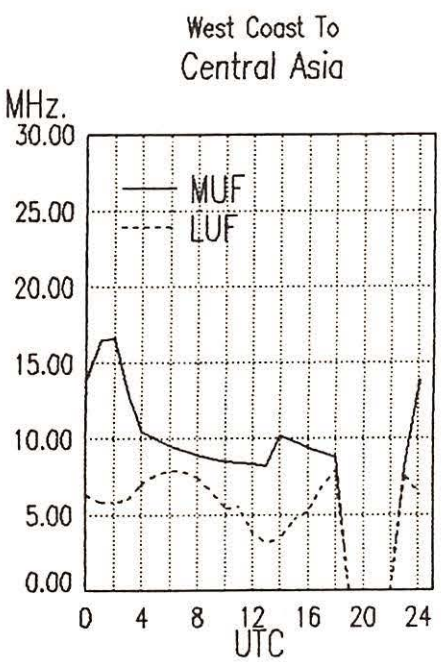


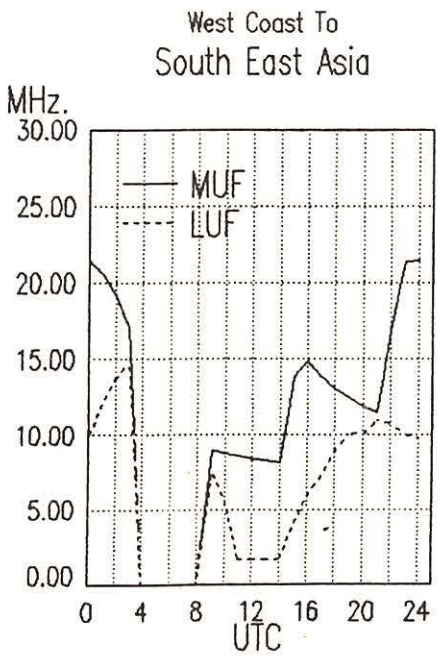
frequency SECTION

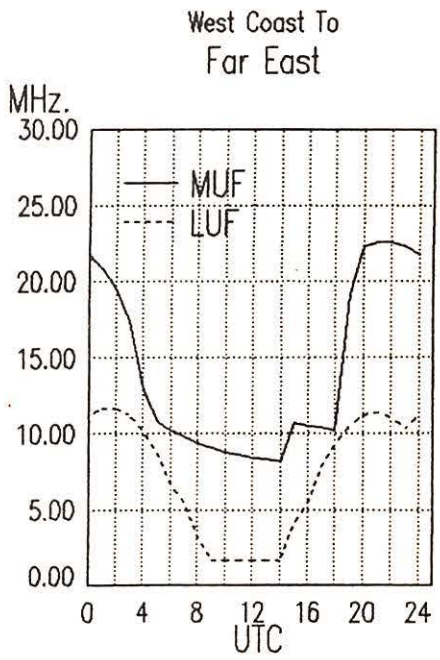
1300-1400		Radio Jordan, Amman	9560
1300-1400		Radio Moscow, USSR	9600 9795 13710 15460 15500 17595
1300-1400	A,S	Radio Tanzania, Dar es Salaam	7165
1300-1400		SBC Radio One, Singapore	5010 5052 11940
1300-1400	S	Superpower KUSW, Utah	9850
1300-1400		Voice of America, Washington	6110 9760 15160 15425
1300-1400		Voice of Malaysia	7295
1300-1400		Voice of Nigeria, Lagos	7255 15120
1300-1400		WCSN, Boston, Massachusetts	5980
1300-1400		WHRI, Noblesville, Indiana	5995 11790
1300-1400		WYFR, Oakland, California	5950 6105 9565 15215
1300-1400		WYFR Satellite Net, California	9565
1305-1315		Radio France Int'l, Paris	6175 9790 9805 11670 11845 15155 15195 15300 15315 15365 17620 17720 17850 21645
1315-1400		Radio Berlin Int'l, E. Germany	15240 17880 21465 21540
1330-1345		Radio Korea, Seoul, South Korea	7275 11740
1330-1355		Radio Austria Int'l, Vienna	15320
1330-1400		BBC, London, England	17790 17885 12095 15070 21470
1330-1400		All India Radio, New Delhi	9545 10330 11810 15335
1330-1400	M-A	Bhutan Bcasting Service, Thimpu	6035
1330-1400		Laotian National Radio	7113
1330-1400		Radio Canada Int'l, Montreal	9625 11855 17820
1330-1400		Radio Tashkent, Uzbek, USSR	5945 7275 9540 9600 11785
1330-1400		Swiss Radio Int'l, Berne	11695 13685 15135 15570 17830 21695
1330-1400		UAE Radio, United Arab Emirates	15435 17865 21605
1330-1400		Voice of Islamic Republic Iran	9525 9685 9770
1330-1400		Voice of Kenya, Nairobi	6100
1330-1400		Voice of Vietnam, Hanoi	9840 15010
1332-1400	A	Trans World Radio, Bonaire	11815 15345
1345-1400		Radio Berlin Int'l, E. Germany	9665 11705 11785 15170 15240

1400 UTC [10:00 AM EDT/6:00 AM PDT]

1400-1415		Radio Berlin Int'l, East Germany	21465 21540
1400-1427		Voice of Nigeria, Lagos	15120
1400-1430		ABC, Alice Springs, Australia	2310 [ML]
1400-1430		ABC, Tennant Creek, Australia	2325 [ML]
1400-1430		Radio Berlin Int'l, E. Germany	9665 11705 11785 15170 15240
1400-1430		Radio Finland, Helsinki	11945 15400
1400-1430	S	Radio Norway Int'l, Oslo	21700
1400-1430		Radio Peace and Progress, USSR	17645 17765
1400-1430		Radio Polonia, Warsaw, Poland	6095 7285
1400-1430		Radio Sweden, Stockholm	15345 15390
1400-1430		Radio Tirana, Albania	9500 11985
1400-1430		Voice of Ethiopia, Addis Ababa	9550 11710
1400-1430		Voice of Republic of Iran	15085
1400-1450	T	Radio Free Europe, Munich*	5985 7115 7695 9725 11895 15355
1400-1450		Radio Pyongyang, North Korea	6576 11735
1400-1455		Radio Beijing, China	11600 15165
1400-1500		ABC, Katherine, Australia	2485
1400-1500		ABC, Perth, Australia	9610
1400-1500		Adventist World Radio, Italy	7275
1400-1500		All India Radio, New Delhi	9545 11810 15335
1400-1500		(US) Armed Forces Radio and TV	9700 15330 15430
1400-1500		BBC, London, England	5995 6195 7180 9740 9750 11750 12095 15070 15260 17705 17790 21710 21470
1400-1500		CBN, St. John's, Newfoundland	6160
1400-1500		CBC Northern Quebec Service	9625 11720
1400-1500	M-A	CBU, Vancouver, British Colombia	6160
1400-1500		CFCF, Montreal, Quebec	6005
1400-1500		CFCN, Calgary, Alberta	6030
1400-1500		CHNS, Halifax, Nova Scotia	6130
1400-1500		CKWX, Vancouver, British Colombia	6080
1400-1500		CFRB, Toronto, Ontario	6070
1400-1500	S	ELWA, Monrovia, Liberia	11830
1400-1500		(US) Far East Network, Tokyo	3910





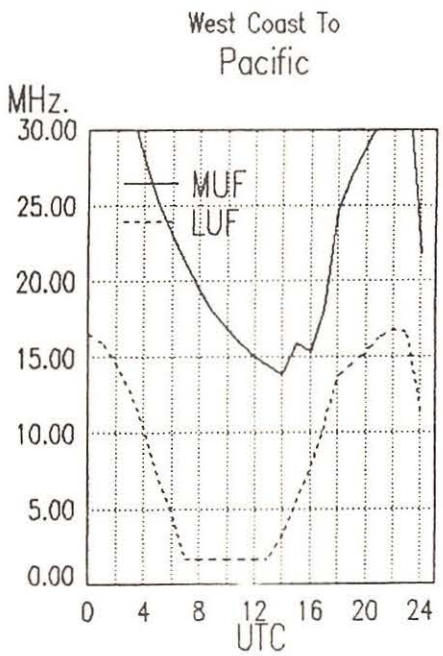


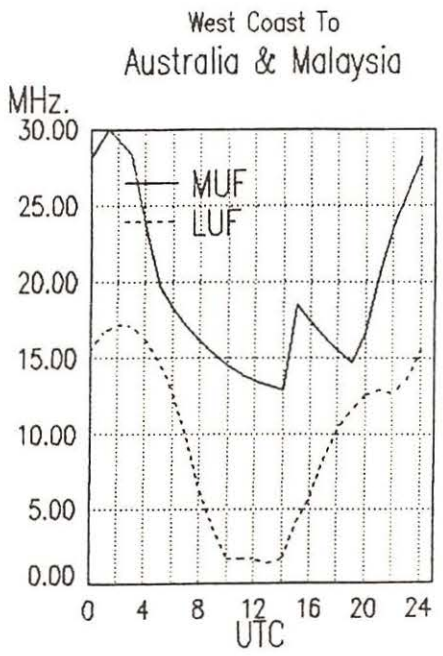
frequency SECTION

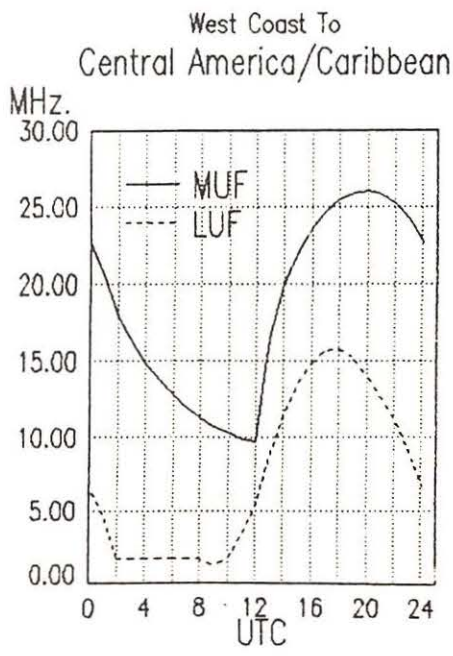
1400-1500		FEBC, Manila, Philippines	9670	11850			
1400-1500		HCJB, Quito, Ecuador	11740	15115	17890		
1400-1500		KNLS, Anchor Point, Alaska	9750				
1400-1500		KYOI, Saipan	11900				
1400-1500		Radio Australia, Melbourne	5995	6035	6060	6080	
			7205	9580			
1400-1500	S	Radio Canada Int'l, Montreal	9625	11720	11955	15440	
			17820				
1400-1500		Radio Japan, Tokyo	9695	11815			
1400-1500		Radio Jordan, Amman	9560				
1400-1500		Radio Korea, Seoul	9570	9750	15575		
1400-1500		Radio Moscow, USSR	11840	13710	15135	15460	
			15500	15530	17645	17860	
1400-1500		Radio RSA, South Africa	21590				
1400-1500	A,S	Radio Tanzania, Dar es Salaam	7165				
1400-1500		SBC Radio One, Singapore	5010	5052	11940		
1400-1500	S	Superpower KUSW, Utah	9850				
1400-1500		Voice of America, Washington	9645	9760	11920	15160	
			15205	15425			
1400-1500		Voice of Kenya, Nairobi	6100				
1400-1500		Voice of Malaysia, Kuala Lumpur	4950				
1400-1500		Voice of Nigeria, Lagos	7255				
1400-1500		WCSN, Boston, Massachusetts	13760				
1400-1500		WHRI, Noblesville, Indiana	9565				
1400-1500		WYFR, Oakland, California	5950	7355	9565		
1400-1500		WYFR Satellite Net, California	13695	15215			
1415-1420		Radio Nepal, Kathmandu	3230	5005			
1430-1455	M-A	BRT, Brussels, Belgium	15510	15590			
1430-1500	F	ABC, Alice Springs, Australia	2310	[ML]			
1430-1500	F	ABC, Tennant Creek, Australia	2325	[ML]			
1430-1500		Burma Broadcasting Service	5985				
1430-1500		King of Hope, Southern Lebanon	6280				
1430-1500		KTWR, Agana, Guam	9780				
1430-1500		Radio Australia, Melbourne	6060	9580			
1430-1500	S	Radio Finland, Helsinki	11945	15400			
1430-1500		Radio Netherland, Hilversum	11740	13770	15560	17575	
1430-1500		Radio Prague, Czechoslovakia	9605	11685	13715	15110	
			15155	17705	21505		
1430-1500		Radio Yugoslavia, Belgrade	7240	15240	15415		
1430-1500		Voice of Turkey, Ankara	15255				
1445-1500	M-A	Radio Ulan Bator, Mongolia	9575	15305			

1500 UTC [11:00 AM EDT/7:00 AM PDT]

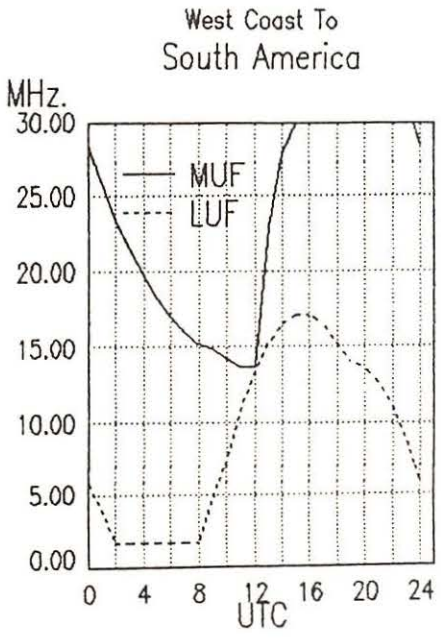
1500-1505		Africa No. 1, Gabon	7200	15200			
1500-1510		Vatican Radio, Vatican City	11960	15090	17870		
1500-1515		FEBA, Mahe, Seychelles	15325				
1500-1520		Radio Ulan Bator, Mongolia	9575	15305			
1500-1525		Radio Bucharest, Romania	9510	9690	11775	11940	
			15250	15335			
1500-1525		Radio Netherland, Hilversum	11740	13770	15560	17575	
1500-1530		Radio Finland, Helsinki	11755	15185	17800		
1500-1530	A,S	Radio Tanzania, Dar es Salaam	7165				
1500-1530		Radio Veritas Asia, Philippines	9770	15215			
1500-1550		Deutsche Welle, West Germany	7225	9735	17765	15135	
			21600				
1500-1550		KTWR, Agana, Guam	9820				
1500-1550		Radio Pyongyang, North Korea	6576	9325	9345	9640	
			9977				
1500-1555		Radio Beijing, China	11600	15165			
1500-1600	F	ABC, Alice Springs, Australia	2310	[ML]			
1500-1600		ABC, Perth, Australia	9610				
1500-1600	F	ABC, Tennant Creek, Australia	2325	[ML]			
1500-1600		(US) Armed Forces Radio and TV	9700	15330	15430		
1500-1600		AWR, Alajuela, Costa Rica	15460				
1500-1600		BBC, London, England	9740	12095	15070	15260	
			15400	17705	17790	17830	
			17885	21710			
1500-1600		Burma Broadcasting Service	5985				
1500-1600		CBC Northern Quebec Service	9625	11720			
1500-1600		CBN, St. John's, Newfoundland	6160				
1500-1600		CBU, Vancouver, British Colombia	6160				
1500-1600		CFCF, Montreal, Quebec	6005				
1500-1600		CFCN, Calgary, Alberta	6030				
1500-1600		CHNS, Halifax, Nova Scotia	6130				
1500-1600		CKWX, Vancouver, British Colombia	6080				
1500-1600		CFRB, Toronto, Ontario	6070				
1500-1600	S	ELWA, Monrovia, Liberia	11830				







1500-1600		(US) Far East Network, Tokyo	3910
1500-1600		FEBC, Manila, Philippines	11850
1500-1600		HCJB, Quito, Ecuador	11740 11810 15115 17890
1500-1600		King of Hope, Southern Lebanon	6280
1500-1600		KNLS, Anchor Point, Alaska	9750
1500-1600		KSDA, Agat, Guam	11980
1500-1600		KYOI, Saipan	11900
1500-1600		Radio Australia, Melbourne	5995 6035 6060 6080 7205 7215 9580
1500-1600	S	Radio Canada Int'l, Montreal	11955 17820
1500-1600		Radio Japan, Tokyo	9505 9695 11815 21700
1500-1600		Radio Jordan, Amman	9560
1500-1600		Radio Moscow, USSR	11840 13710 15135 15530 15460 15500
1500-1600		Radio RSA, South Africa	9655 15125 17755 21590
1500-1600		SBC Radio One, Singapore	5010 5052 11940
1500-1600	S	Superpower KUSW, Utah	9850
1500-1600		Voice of America, Washington	9575 9700 9760 15205
1500-1600		Voice of Ethiopia, Addis Ababa	7165 9560
1500-1600		Voice of Indonesia, Jakarta	11790 15150
1500-1600		Voice of Kenya, Nairobi	6100
1500-1600		Voice of Malaysia, Kuala Lumpur	4950
1500-1600		Voice of Nigeria, Lagos	7255 11770
1500-1600		WCSN, Boston, Massachusetts	13760
1500-1600		WHRI, Noblesville, Indiana	9455 11790
1500-1600	S	WRNO, New Orleans, Louisiana	11965
1500-1600		WYFR, Oakland, California	5950 9535 11830 15215
1500-1600		WYFR Satellite Net	13695
1515-1600		FEBA, Mahe, Seychelles	11865 15325
1515-1600		Radio Berlin Int'l, East Germany	15240 17880
1530-1545		All India Radio, New Delhi	3905 3925 4860 6160 7160 7412 9545 9950
1530-1600		Radio Prague, Czechoslovakia	13715 15165
1530-1600		Radio Sofia, Bulgaria	7245 9740 11735
1530-1600		Radio Tanzania, Dar es Salaam	9684
1530-1600		Radio Tirana, Albania	9480 11835
1530-1600		Swiss Radio Int'l, Berne	17830 13685 21630
1530-1600		Voice of Asia, Taiwan	5980 7445
1530-1600		Voice of Nigeria, Lagos	15120
1530-1600		WYFR, Okeechobee, Florida	15055



1540-1550	M-A	Voice of Greece, Athens	9855 11645 15630
1545-1600		Radio Berlin Int'l, East Germany	11785 15170 15255
1545-1600	M-F	Radio Canada Int'l, Montreal	11915 11935 15160 15325 15305 17820
1545-1600		Vatican Radio, Vatican City	11810 15120 17730
1550-1600	H-S	KTWR, Agana, Guam	9780

1600 UTC [12:00 PM EDT/9:00 AM PDT]

1600-1610		FEBA, Mahe, Seychelles	11865 15325
1600-1610		Radio Lesotho, Maseru	4800
1600-1610		SBC Radio One, Singapore	5010 5052 11940
1600-1625		Radio Prague, Czechoslovakia	6055 7345 9605 11665 11685 11990 15110 13715 15110 15165 17705 21505
1600-1630		ELWA, Monrovia, Liberia	11830
1600-1630		Radio Berlin Int'l, East Germany	11785 15170 15255
1600-1630	S	Radio Norway Int'l, Oslo	15220 15310
1600-1630		Radio Pakistan, Islamabad	7365 9465 9785 11615 11625 15125
1600-1630		Radio Polonia, Warsaw, Poland	6135 9540
1600-1630	M-F	Radio Portugal, Lisbon	15245
1600-1630		Radio Sofia Bulgaria	7245 9560 11735 15310
1600-1630		Radio Sweden, Stockholm	6065 11855
1600-1630		SLBC, Colombo, Sri Lanka	6075 9720
1600-1630		Trans World Radio, Swaziland	5055 9525
1600-1630		Voice of Asia, Taiwan	5980 7445
1600-1630		Voice of Vietnam, Hanoi	9840 15010
1600-1645	H-A	KTWR, Agana, Guam	9820
1600-1645		Radio Nacional Angola, Luanda	7245 9535 11955
1600-1645		UAE Radio, United Arab Emirates	11955 15320 15435 17865
1600-1655		Radio Beijing, China	9570 11600 11715
1600-1700	F	ABC, Alice Springs, Australia	2310 [ML]
1600-1700		ABC, Perth, Australia	9610
1600-1700	F	ABC, Tennant Creek, Australia	2325 [ML]
1600-1700		(US) Armed Forces Radio and TV	9700 15330 15430
1600-1700		AWR, Alajuela, Costa Rica	15460
1600-1700		BBC, London, England	9410 9740 11750 11775 12095 15070 15260 15400 17880
1600-1700		CBC Northern Quebec Service	9625 11720
1600-1700		CBN, St. John's, Newfoundland	6160
1600-1700		CBU, Vancouver, British Colombia	6160
1600-1700		CFCF, Montreal, Quebec	6005
1600-1700		CFCN, Calgary, Alberta	6030
1600-1700		CHNS, Halifax, Nova Scotia	6130
1600-1700		CKWX, Vancouver, British Colombia	6080
1600-1700		CFRB, Toronto, Ontario	6070
1600-1700		(US) Far East Network, Tokyo	3910
1600-1700		HCJB, Quito, Ecuador	17890
1600-1700		Radio Australia, Melbourne	5995 6035 6060 6080 7205 7215 9580
1600-1700		Radio Beijing, China	15130
1600-1700	S	Radio Canada Int'l, Montreal	9555 9625 11720 11915 11955 15315 15440 17820
1600-1700		Radio France Int'l, Paris	11705 15360 17620
1600-1700		Radio Jordan, Amman	9560
1600-1700		Radio Korea, Seoul, South Korea	5985 9870
1600-1700		Radio Malawi, Blantyre	3380 5995
1600-1700		Radio Moscow, USSR	11840 13680 15135 15460 15550
1600-1700		Radio Riyadh, Saudi Arabia	9705 9720
1600-1700		Radio RSA, South Africa	11890
1600-1700		Radio Tanzania, Dar es Salaam	9684
1600-1700	S	Superpower KUSW, Utah	9850
1600-1700		Voice of America, Washington, DC	9575 9645 9760 11920 15410 15445 15205 15580 15560 17820 17785 17870
1600-1700		WCSN, Boston, MA	21640
1600-1700		WHRI, Noblesville, Indiana	15105 21655
1600-1700		WRNO, New Orleans, Louisiana	11965
1600-1700		WYFR, Oakland, California	5950 9535 11830 13695 15215 17612
1600-1700		Radio Zambia, Lusaka	9580

frequency SECTION

1615-1630	M,H	Radio Budapest, Hungary	7220	9585	9835	11910	
			15160	15220			
1615-1630		Voice of Vietnam, Hanoi	10011				
1615-1700		Radio Berlin Int'l, East Germany	6115	7295	9730		
1630-1700		Radio Netherlands, Hilversum	6020	9540			
1630-1700		RTM Morocco	17595	17815			
1645-1700		Radio Canada In'l, Montreal	9555	11915	11935	15315	
			15325	17820			
1645-1700		Radio Korea, Seoul, South Korea	7275	9870			

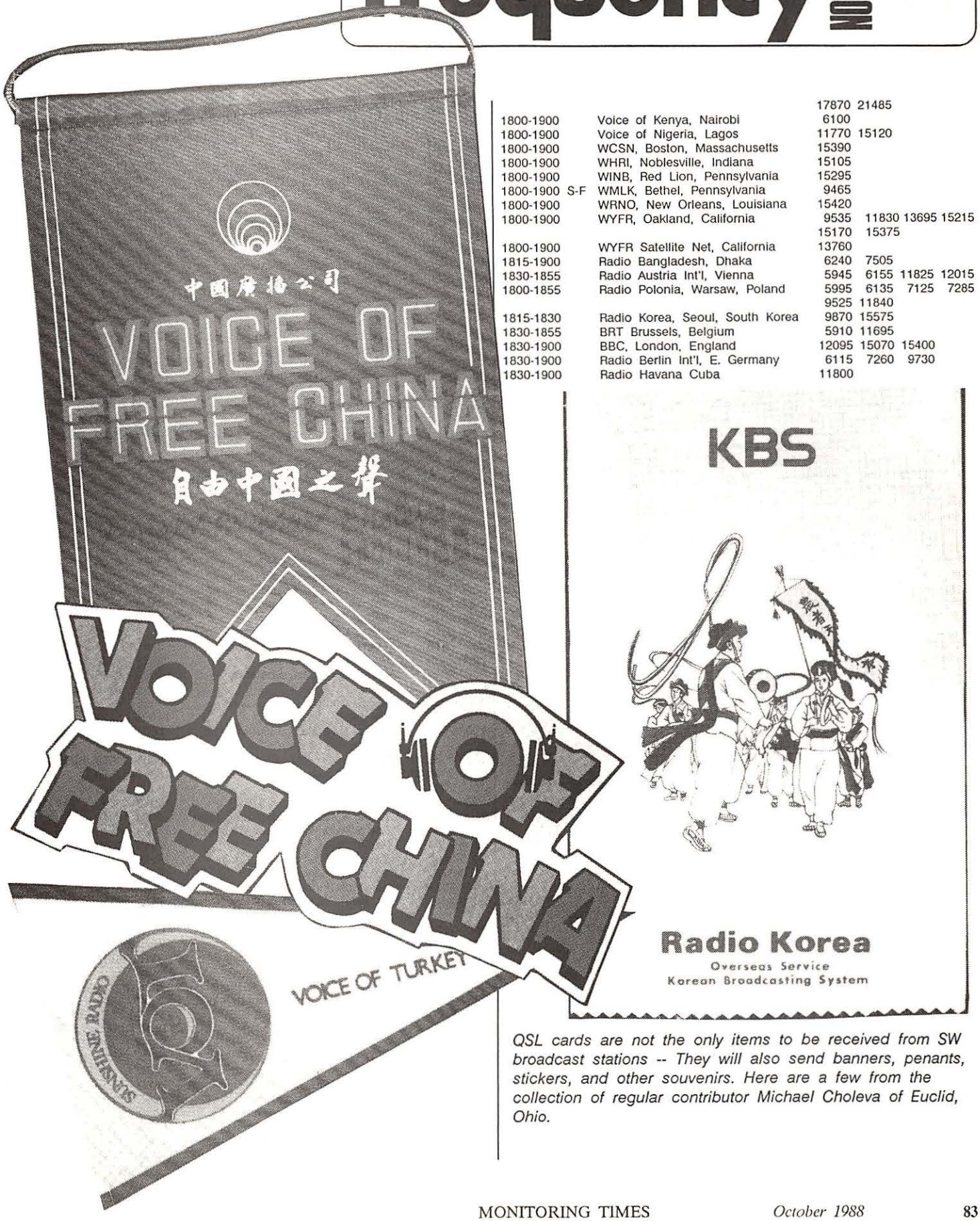
1700 UTC [1:00 PM EDT/10:00 AM PDT]

1700-1705		Radio Uganda, Kampala	4976	5026			
1700-1715	M-A	Voice of Namibia (Angola)	11955				
1700-1725		Radio Budapest, Hungary	6110	9585	9835	11910	
			15160				
1700-1725		Radio Netherland, Hilversum	6020	9590			
1700-1730		Radio Australia, Melbourne	5995	6060	6080	7205	
			9580				
1700-1730		Radio Japan, Tokyo	9505	11705	11815		
1700-1730	S	Radio Norway Int'l, Oslo	15220	15310	21700		
1700-1730		Radio Sweden Int'l, Oslo	6065				
1700-1730		Swiss Radio Int'l, Berne	3985	6165	9535		
1700-1745		BBC, London, England	9410	9740	11750	11775	
			12095	15070	15260	15400	
			18080				
1700-1750		Radio Pyongyang, North Korea	7290	9325	9640	9977	
1700-1755		Radio Beijing, China	9570	11600			
1700-1800	F	ABC, Alice Springs, Australia	2310	[ML]			
1700-1800		ABC, Tennant Creek, Australia	2325	[ML]			
1700-1800		(US) Armed Forces Radio and TV	9700	15330	15430		
1700-1800		AWR Africa, Gabon	9625				
1700-1800		CBC Northern Quebec Service	9625	11720			
1700-1800		CBN, St. John's, Newfoundland	6160				
1700-1800		CBU, Vancouver, British Colombia	6160				
1700-1800		CFCF, Montreal, Quebec	6005				
1700-1800		CFCN, Calgary, Alberta	6030				
1700-1800		CHNS, Halifax, Nova Scotia	6130				
1700-1800		CKWX, Vancouver, British Colombia	6080				
1700-1800		CFRB, Toronto, Ontario	6070				
1700-1800		(US) Far East Network, Tokyo	3910				
1700-1800	S	KCBI, Dallas, Texas	11735				
1700-1800		Radio Havana Cuba	11920				
1700-1800		Radio Jordan, Amman	9560				
1700-1800		Radio Korea, Seoul, South Korea	5975	9870			
1700-1800	M-F	Radio Malabo, Equatorial Guinea	9553	[ML]			
1700-1800		Radio Moscow, USSR	9825	9875	11840	11950	
			12005	12015	11995	15135	
			15460	15550			
1700-1800		Radio Riyadh, Saudi Arabia	9705	9720			
1700-1800		Radio Tanzania, Dar es Salaam	9684				
1700-1800		Radio Zambia, Lusaka	9580				
1700-1800		RTM Morocco	17815				
1700-1800		SBC Radio One, Singapore	5052	11940			
1700-1800		Superpower KUSW, Utah	15225				
1700-1800	A,S	Swaziland Commercial Radio	6155				
1700-1800		Voice of Africa, Egypt	15255				
1700-1800		Voice of America, Washington	9575	11920	15205	15410	
			15445	15580	15600	17785	
			17800	17870			
1700-1800		Voice of Kenya, Nairobi	6100				
1700-1800		Voice of Nigeria, Lagos	11770				
1700-1800		WCSN, Boston, Massachusetts	21640				
1700-1800		WHRI, Noblesville, Indiana	15105	21655			
1700-1800		WINB, Red Lion, Pennsylvania	15295				
1700-1800	S	WRNO, Louisiana	11965				
1700-1800		WYFR Satellite Net	13695				
1700-1800		WYFR, Okeechobee, Florida	9535	11830	15170	15215	
			21525				
1715-1745		BBC, London, England*	3975	6185	7165		
1718-1800		Radio Pakistan, Islamabad	6210	7835			
1725-1740		Radio Suriname Int'l, Paramibo	7835v				
1725-1800		Radio New Zealand, Wellington	11780	15150			
1730-1735		All India Radio, New Delhi	4840	4860	4920	6160	
			7412	9950			
1730-1755	M-A	BRT, Brussels, Belgium	17595	21810			
1730-1800		KNLS, Anchor Point, Alaska	7355				
1730-1755		Radio Bucharest, Romania	7105	9530	9685	11790	
			11940				
1730-1800		Radio Australia, Melbourne	5995	6035	6060	6080	
			7205	9580			
1730-1800		Radio Polonia, Warsaw, Poland	6135	9540			
1730-1800		Radio Prague, Czechoslovakia	13715	15165			
1730-1800		Radio Yugoslavia, Belgrade	5980	6100	7240	11735	
1730-1800		RAE, Buenos Aires, Argentina	15345				
1734-1800		FEBA, Mahe, Seychelles	11760				
1745-1800		BBC, London, England	9515	9740	12095	15070	
			15260				
1745-1800		SLBC, Colmbo, Sri Lanka	11800				

1800 UTC [2:00 PM EDT/11:00 AM PDT]

1800-1805	A	SBC Radio One, Singapore	11940				
1800-1815		Kol Israel, Jerusalem	9385	9640	9925	11585	
1800-1815		Radio Cameroon, Yaounde	3970	4750	4795	4850	
			5010				
1800-1815		SLBC, Colombo, Sri Lanka	11800				
1800-1825	A,S	FEBA, Mahe, Seychelles	11760				
1800-1825		Radio Prague, Czechoslovakia	9605	11685	11990	13715	
			15110	21505			
1800-1825		RAE, Buenos Aires, Argentina	15345				
1800-1830		BBC, London, England	9740	11750	12095	15070	
			15400				
1800-1830	S	Radio Bamako, Mali	4835	5995			
1800-1830		Radio Berlin Int'l, East Germany	6115	7260	9730		
1800-1830		Radio Mozambique, Maputo	3265	4855	9618		
1800-1830		Radio Prague, Czechoslovakia	5930	7345	13715		
1800-1830		Voice of Africa, Egypt	15255				
1800-1830		Voice of Vietnam, Hanoi	9840	15010			
1800-1845		Radio Abidjan, Ivory Coast	7215				
1800-1845		Trans World Radio, Swaziland	9525				
1800-1850		Deutsche Welle, West Germany	11785	13790	15135	17715	
1800-1850		Radio Bras, Brasilia, Brazil	15265				
1800-1856		Radio RSA, South Africa	17880				
1800-1900	F	ABC, Alice Springs, Australia	2310	[ML]			
1800-1900	F	ABC, Tennant Creek, Australia	2325	[ML]			
1800-1900		All India Radio, New Delhi	11935	15360			
1800-1900		(US) Armed Forces Radio and TV	9700	15330	15430		
1800-1900		CBC Northern Quebec Service	9625	11720			
1800-1900		CBN, St. John's, Newfoundland	6160				
1800-1900		CBU, Vancouver, British Colombia	6160				
1800-1900		CFCF, Montreal, Quebec	6005				
1800-1900		CFCN, Calgary, Alberta	6030				
1800-1900		CHNS, Halifax, Nova Scotia	6130				
1800-1900		CKWX, Vancouver, British Colombia	6080				
1800-1900		CFRB, Toronto, Ontario	6070				
1800-1900		(US) Far East Network, Tokyo	3910				
1800-1900	A,S	KCBI, Dallas, Texas	11735				
1800-1900		KNLS, Anchor Point, Alaska	11650				
1800-1900		KYOI, Saipan	9670				
1800-1900		Radio Australia, Melbourne	5995	6035	6060	6080	
			7205	7215	9580		
1800-1900		Radio Jamahiriya, Libya	15450				
1800-1900		Radio Kuwait, Kuwait	11665				
1800-1900		Radio Malabo, Equatorial Guinea	9553v	[ML]			
1800-1900		Radio Moscow, USSR	9580	9825	9875	11750	
			11840	11900	11930	11950	
			11995	12005	12030	12050	
			15135	15460	15475		
1800-1900		Radio New Zealand, Wellington	11780	15150			
1800-1900		Radio Riyadh, Saudi Arabia	9705	9720			
1800-1900		Radio Tanzania, Dar es Salaam	9684				
1800-1900		Radio Zambia, Lusaka	9580				
1800-1900	M-A	Superpower KUSW, Utah	15225				
1800-1900	A,S	Swaziland Commercial Radio	6155				
1800-1900		Voice of America, Washington	9575	11920	15410	15445	
			15580	15600	17785	17800	

			17870	21485		
1800-1900		Voice of Kenya, Nairobi	6100			
1800-1900		Voice of Nigeria, Lagos	11770	15120		
1800-1900		WCSN, Boston, Massachusetts	15390			
1800-1900		WHRI, Noblesville, Indiana	15105			
1800-1900		WINB, Red Lion, Pennsylvania	15295			
1800-1900	S-F	WMLK, Bethel, Pennsylvania	9465			
1800-1900		WRNO, New Orleans, Louisiana	15420			
1800-1900		WYFR, Oakland, California	9535	11830	13695	15215
			15170	15375		
1800-1900		WYFR Satellite Net, California	13760			
1815-1900		Radio Bangladesh, Dhaka	6240	7505		
1830-1855		Radio Austria Int'l, Vienna	5945	6155	11825	12015
1800-1855		Radio Polonia, Warsaw, Poland	5995	6135	7125	7285
			9525	11840		
1815-1830		Radio Korea, Seoul, South Korea	9870	15575		
1830-1855		BRT Brussels, Belgium	5910	11695		
1830-1900		BBC, London, England	12095	15070	15400	
1830-1900		Radio Berlin Int'l, E. Germany	6115	7260	9730	
1830-1900		Radio Havana Cuba	11800			



QSL cards are not the only items to be received from SW broadcast stations -- They will also send banners, penants, stickers, and other souvenirs. Here are a few from the collection of regular contributor Michael Choleva of Euclid, Ohio.

frequency SECTION

1830-1900		Radio Kuwait	11665
1830-1900	MWF	Radio Mozambique, Maputo	3265 4855 9618
1830-1900		Radio Netherland, Hilversum	6020 9540 17605 21685
1830-1900		Radio Sofia, Bulgaria	7245 9560 11735 15310
1830-1900		Radio Sweden, Stockholm	15240
1840-1850	M-A	Voice of Greece, Athens	11645 12045 15630
1840-1900		Radio Senegal, Dakar	4950
1845-1855		Radio Nacional, Conakry, Guinea	4833 4900 7125
1845-1900		All India Radio, New Delhi	7412 11620
1855-1900		Africa No. 1, Gabon	4830 15475

1900 UTC [3:00 PM EDT/12:00 PM PDT]

1900-1903		Africa No. 1, Gabon	15475
1900-1903		Vatican Radio, Vatican City	6190 7250 9645
1900-1915		Radio Bangladesh, Dhaka	6240 7505
1900-1915		Radio Tanzania, Dar es Salaam	9684
1900-1925		Radio Netherland, Hilversum	6020 15175 17605 21685
1900-1925		Voice of Islamic Republic Iran	9695
1900-1930	F	ABC, Alice Springs, Australia	2310 [ML]
1900-1930	F	ABC, Tennant Creek, Australia	2325 [ML]
1900-1930		Radio Afghanistan, Kabul	7160 9640
1900-1930		Radio Canada Int'l, Montreal	15260 17820
1900-1930		Radio Japan, Tokyo	9505 11705
1900-1930	S	Radio Norway Int'l, Oslo	9590 15220 15310
1900-1930	M-F	Radio Portugal, Lisbon	11870 15250
1900-1930		Radio Sofia Bulgaria	7245 7155 9700
1900-1930		Radio Yugoslavia, Belgrade	5980 7240 9620
1900-1930		Voice of Vietnam, Hanoi	12020 15010
1900-1955		Radio Beijing, China	6860 9470
1900-2000		All India Radio, New Delhi	7412 11620 11935 15360
1900-2000		(US) Armed Forces Radio and TV	9700 15330 15430
1900-2000		BBC, London, England	9410 15400 12095 15070
1900-2000		CBC Northern Quebec Service	9625 11720
1900-2000		CBN, St. John's, Newfoundland	6160
1900-2000		CBU, Vancouver, British Colombia	6160
1900-2000		CFCF, Montreal, Quebec	6005
1900-2000		CFCN, Calgary, Alberta	6030
1900-2000		CHNS, Halifax, Nova Scotia	6130
1900-2000		CKWX, Vancouver, British Colombia	6080
1900-2000		CFRB, Toronto, Ontario	6070
1900-2000		(US) Far East Network, Tokyo	3910
1900-2000		HCJB, Quito, Ecuador	11790 15270 17590 17790
1900-2000	A,S	KCBI, Dallas, Texas	11735
1900-2000		KNLS, Anchor Point, Alaska	11650
1900-2000		KYOI, Saipan	9670
1900-2000		Radio Algiers, Algeria	9509 9685 15215 17745
1900-2000		Radio Australia, Melbourne	6035 6060 6080 7205 7215 9580
1900-2000		Radio Ghana, Accra	6130
1900-2000		Radio Havana Cuba	11800
1900-2000		Radio Korea, Seoul, South Korea	9870 15575
1900-2000		Radio Kuwait, Kuwait	11665
1900-2000	M-A	Radio Malabo, Equatorial Guinea	9553 [ML]
1900-2000		Radio Moscow, USSR	9580 9875 11840 11995 12030 12050 15135 15475
1900-2000		Radio New Zealand, Wellington	11780 15150
1900-2000		Radio Prague, Czechoslovakia	5930 7345
1900-2000		Radio Riyadh, Saudi Arabia	9705 9720
1900-2000		Radio RSA, South Africa	5950 7270 9610
1900-2000		Radio Zambia, Lusaka	9580
1900-2000		Spanish Foreign Radio, Madrid	9765 11790 15375 15395
1900-2000	M-A	Superpower KUSW, Utah	15225
1900-2000	A,S	Swaziland Commercial Radio	6155
1900-2000		Trans World Radio Swaziland	3205
1900-2000		Voice of America, Washington	9760 11760 15205 15410 15445 15580 15600 17785 17800 17870
1900-2000		Voice of Ethiopia, Addis Ababa	9595
1900-2000		Voice of Kenya, Nairobi	6100
1900-2000		Voice of Nigeria, Lagos	7255 11770
1900-2000		WCSN, Boston, Massachusetts	15390
1900-2000		WHRI, Noblesville, Indiana	13760 17830
1900-2000		WINB, Red Lion, Pennsylvania	15295
1900-2000	S-F	WMLK, Bethel, Pennsylvania	9465
1900-2000		WRNO, New Orleans, Louisiana	15420
1900-2000		WYFR, Oakland, California	11580 15170 15175 15215
1900-2000		WYFR Satellite Net, California	11830 13695
1910-1920		Radio Botswana, Gaborone	3356 4820
1920-1930	M-A	Voice of Greece, Athens	7430 9395 9425
1930-1940		Radio Togo, Lome	5047
1930-1955		BRT, Brussels, Belgium	5910 9860 11695
1930-2000		ABC, Katherine, Australia	2485
1930-2000		Radio Beijing, China	6955 7480 9440
1930-2000		Radio Bucharest, Romania	7145 9690 9750 11940
1930-2000		Radio Budapest, Hungary	6110 7220 9585 9835 11910 15160
1930-2000	A,S	Radio Canada Int'l, Montreal	15260 17820
1930-2000		Radio Finland, Helsinki	6120 9550 11755 15185
1930-2000	M-F	Radio Portugal, Lisbon	9605 11740
1930-2000		Radio Sofia Bulgaria	9700 11720
1930-2000		Voice of Republic of Iran	9022 9770
1930-2000		WINB, Red Lion, Pennsylvania	15185
1935-1955		RAI, Rome, Italy	7275 7290 9575
1940-2000	M-A	Radio Ulan Bator, Mongolia	9575 11870
1945-2000		All India Radio, New Delhi	9755 11860
1950-2000		Vatican Radio, Vatican City	6190 7250 9645

2000 UTC [4:00 PM EDT/1:00 PM PDT]

2000-2005	S-F	Port Moresby, Papua New Guinea	3295 4890 5960 5985 6020 6040 6080 6140 9520
2000-2005		Radio Zambia, Lusaka	3345 6165
2000-2010	M-A	Vatican Radio, Vatican City	6190 7250
2000-2010	A	Radio Zambia, Lusaka	3345 6165
2000-2010		Voice of Kenya, Nairobi	6100
2000-2015		Radio Togo, Lome	3220 5047
2000-2015	M-A	Radio Ulan Bator, Mongolia	9575 11870
2000-2015		Trans World Radio, Swaziland	3205
2000-2025		Radio Beijing, China	6955 7480 9440
2000-2025		Radio Bucharest, Romania	5990 6105 7145 7195 9690 9750 11940
2000-2030		KNLS, Anchor Point, Alaska	7355
2000-2030		Kol Israel, Jerusalem	11605 13625 15485 15592
2000-2030		Radio Australia, Melbourne	6035 7205 7215 9580 9620
2000-2030		Radio Berlin Int'l, East Germany	9665 11920 15255
2000-2030	M-F	Radio Canada Int'l, Montreal	15260 17820
2000-2030		Radio Ghana, Nairobi	3366 4915
2000-2030		Radio Kiev, Ukraine, USSR	6010 6090 6165 7170
2000-2030		Radio Norway International, Oslo	9590 15310
2000-2030		Radio Polonia, Warsaw, Poland	7125 7145 9525
2000-2030		Radio Sofia, Bulgaria	7245 9560 11735 15310
2000-2030		Swaziland Commercial Radio	6155
2000-2030		Voice of Nigeria, Lagos	7255
2000-2030		Voice of Republic of Iran	9022 9770
2000-2045		All India Radio, New Delhi	7412 9755 9910 11620 11860
2000-2050		Radio Pyongyang, North Korea	6576 9345 9640 9977
2000-2056		Radio RSA, South Africa	7270 9610
2000-2100	M-A	ABC, Alice Springs, Australia	2310 [ML]
2000-2100		ABC, Katherine, Australia	2485
2000-2100	M-A	ABC, Tennant Creek, Australia	2325 [ML]
2000-2100		(US) Armed Forces Radio and TV	9700 15330 15430
2000-2100		BBC, London, England	5975 6005 6180 9410 9515 12095 15070 15260 15400 17760
2000-2100		CBC Northern Quebec Service	9625 11720
2000-2100		CBN, St. John's, Newfoundland	6160
2000-2100		CBU, Vancouver, British Colombia	6160
2000-2100		CFCF, Montreal, Quebec	6005
2000-2100		CFCN, Calgary, Alberta	6030
2000-2100		CHNS, Halifax, Nova Scotia	6130
2000-2100		CKWX, Vancouver, British Colombia	6080
2000-2100		CFRB, Toronto, Ontario	6070

2000-2100		(US) Far East Network, Tokyo	3910			
2000-2100		Radio Kuwait, Kuwait	11665			
2000-2100		King of Hope, Southern Lebanon	6280			
2000-2100	A,S	KCBI, Dallas, Texas	11735			
2000-2100		KYOI, Saipan	9670			
2000-2100		Radio Malabo, Equatorial Guinea	9553v			
2000-2100		Radio Moscow, USSR	9580	9735	9875	11840
			11950	12030	12050	13605
			15135	15425	15475	
2000-2100		Radio New Zealand, Wellington	12050	15150		
2000-2100		Radio for Peace, Costa Rica	21555			
2000-2100		Radio Riyadh, Saudi Arabia	9705	9720		
2000-2100		Radio Zambia, Lusaka	9580			
2000-2100	M-A	Superpower KUSW, Utah	15690			
2000-2100		Voice of America, Washington	9760	11760	15205	15410
			15445	15580	15600	17785
			17800	17870		
2000-2100		Voice of Turkey, Ankara	9825			
2000-2100		Voice of Nigeria, Lagos	11770			
2000-2100		WCSN, Boston, Massachusetts	15390			
2000-2100		WHRI, Noblesville, Indiana	13760	17830		
2000-2100		WINB, Red Lion, Pennsylvania	15295			
2000-2100	S-F	WMLK, Bethel, Pennsylvania	9465			
2000-2100		WRNO, New Orleans, Louisiana	15420			
2000-2100		WYFR, Oakland, California	11830	13695	15170	15175
			15215	15440		
2000-2100	M-A	WYFR Satellite Net, California	13695			
2005-2100		Radio Damascus, Syria	12085	15095		
2010-2100	A,S	Voice of Kenya, Nairobi	6100			
2015-2100		ELWA, Monrovia, Liberia	11830			
2015-2100		Radio Cairo, Egypt	9900			
2025-2045		RAI, Rome, Italy	7235	9575	9710	
2030-2055		Radio Polonia, Warsaw, Poland	6095	7285		
2030-2100		Radio Australia, Melbourne	9580	9620		
2030-2100		Radio Beijing, China	6955	7480	9440	9745
			11790			
2030-2100		Radio Korea, Seoul, South Korea	6480	7550	15575	
2030-2100		Radio Netherland, Hilversum	9540	9895	11740	15560
2030-2100	M-F	Radio Portugal, Lisbon	7155	9740		
2030-2100		Radio Tirana, Albania	9480	11835		
2030-2100		Voice of Africa, Cairo, Egypt	15375			
2030-2100		Voice of Vietnam, Hanoi	9840	12020		
2040-2100		Radio Havana Cuba	15230	15300		
2045-2100		All India Radio, New Delhi	7412	9550	9910	11620
			11715			
2045-2100		IBRA Radio, Malta	6100			
2045-2100		Vatican Radio, Vatican City	9625	11700	11760	15120

2100 UTC [5:00 PM EDT/2:00 PM PDT]

2100-2105		Radio Damascus, Syria	12085	15095		
2100-2105		Radio Zambia, Lusaka	3345	6165		
2100-2110		Vatican Radio, Vatican City	6190	7250	9645	
2100-2110	A,S	Voice of Kenya, Nairobi	6100			
2100-2115		IBRA Radio, Malta	6100			
2100-2125		Radio Austria Int'l, Vienna	5945	6155	9585	9870
2100-2125		Radio Beijing, China	6955	7480	9440	9745
			11790			
2100-2125		Radio Bucharest, Romania	5990	6105	7145	7195
2100-2125		Radio Netherland, Hilversum	9540	9895	11740	15560
2100-2130		Radio Budapest, Hungary	6110	7220	9585	9835
			11910	15160		
2100-2130		Radio Canada Int'l, Montreal	9555	6030	11945	15325
			17820	17875		
2100-2130		Radio Japan, Tokyo	5965	7140	7280	17835
2100-2130		Radio Korea, Seoul, South Korea	6480	7550	15575	
2100-2130		Radio Sweden, Stockholm	6065	11845		
2100-2130		Swiss Radio Int'l, Berne	9885	12035	15570	
2100-2135		ELWA, Monrovia, Liberia	11830			
2100-2140		Radio Havana Cuba	11725	15300	15340	
2100-2145		Radio Cairo, Egypt	9670			
2100-2145		WYFR, Oakland, California	11830	13695	15170	15175
			15220	15440	21525	
2100-2150		Deutsche Welle, West Germany	9650	9765		
2100-2155		Radio Beijing, China	6860	9470	9860	
2100-2200	M-A	ABC, Alice Springs, Australia	2310	[ML]		
2100-2200		ABC, Katherine, Australia	2485			
2100-2200	M-A	ABC, Tennant Creek, Australia	2325	[ML]		
2100-2200		All India Radio, New Delhi	9550	9910	11620	11715
2100-2200		(US) Armed Forces Radio and TV	15330	15345	15430	
2100-2200		BBC, London, England	3995	5975	6005	6175
			6180	7325	9410	12095
			15070	15260	15400	17760
2100-2200		CBC Northern Quebec Service	9625	11720		
2100-2200		CBN, St. John's, Newfoundland	6160			
2100-2200		CBU, Vancouver, British Colombia	6160			
2100-2200		CFCF, Montreal, Quebec	6005			
2100-2200		CFCN, Calgary, Alberta	6030			
2100-2200		CHNS, Halifax, Nova Scotia	6130			
2100-2200		CKWX, Vancouver, British Colombia	6080			
2100-2200		CFRB, Toronto, Ontario	6070			
2100-2200		(US) Far East Network, Tokyo	3910			
2100-2200		King of Hope, Southern Lebanon	6280			
2100-2200		KSDA, Agat, Guam	9465			
2100-2200		KVOH, Rancho Simi, California	17775			
2100-2200		KYOI, Saipan	9670			
2100-2200		Radio Baghdad, Iraq	15230			
2100-2200		Radio Moscow, USSR	9890	11840	11950	12050
			13605	15405	15425	15475
			15535	15560		
2100-2200		Radio for Peace, Costa Rica	21555			
2100-2200	A,S	Radio Malabo, Equatorial Guinea	9552.5			
2100-2200	A,S	Radio Zambia, Lusaka	9580			
2100-2200		Spanish Foreign Radio, Madrid	9765	11790		
2100-2200	M-A	Superpower KUSW, Utah	15690			
2100-2200		Voice of Africa, Cairo, Egypt	15375			
2100-2200		Voice of America, Washington	9760	11760	15205	15410
			15445	15580	15600	17785
			17800	17870		
2100-2200		Voice of Nigeria, Lagos	15120			
2100-2200		WCSN, Boston, Massachusetts	15390			
2100-2200		WHRI, Noblesville, Indiana	13760	17830		
2100-2200		WRNO, New Orleans, Louisiana	15420			
2103-2200		WINB, Red Lion, Pennsylvania	15295			
2110-2200		Radio Damascus, Syria	12085	15095		
2115-2200		BBC, London, England	5975	7325	9410	9915
			12095	15070	15260	
2115-2130		Radio Yugoslavia, Belgrade	6100	9620		
2125-2155	S	Radio Austria Int'l, Vienna	9870			
2130-2145		BBC, London, England*	5965	7160		
2130-2200		BBC, London, England*	6030	7230	9635	
2130-2200		HCJB, Quito, Ecuador	15270	17790		
2130-2200	A,S	Radio Canada Int'l, Montreal	6030	9555	11945	15325
			17820	17875		
2130-2200		Radio Sofia Bulgaria	7115	7155	9700	11720
2130-2200		Radio Tirana, Albania	9480			
2130-2200		Swiss Radio Int'l, Berne	6190			
2135-2150	S-F	ELWA, Monrovia, Liberia	11830			
2145-2200		WYFR, Oakland, California	11830	13695	15170	15566
			17612	17845		
2150-2200	M-F	ELWA, Monrovia, Liberia	11830			

2200 UTC [5:00 PM EDT/3:00 PM PDT]

2200-2205	M-F	ELWA, Monrovia, Liberia	3993	11830		
2200-2205		Radio Damascus, Syria	12085	15095		
2200-2210	M-H	Port Moresby, Papua New Guinea	3925	4890	5960	5985
			6020	6040	6080	6140
			9520			
2200-2210		Radio Sierra Leone, Freetown	5980			
2200-2215	M-A	ABC, Alice Springs, Australia	2310	[ML]		
2200-2215	M-A	ABC, Tennant Creek, Australia	2325	[ML]		
2200-2215		BBC, London, England*	5965	7160		
2200-2215	M-F	Voice of America, Washington	9640	11740	15120	
2200-2225		BRT Brussels, Belgium	5910	9925		
2200-2225		RAI, Rome, Italy	5990	9710	11800	

frequency SECTION

2200-2225		Vatican Radio, Vatican City	6015	9615	11830	
2200-2230		ABC, Katherine, Australia	2485			
2200-2230		All India Radio, New Delhi	9550	9910	11620	11715
2200-2230		CBC Northern Quebec Service	9625	11720		
2200-2230		Radio Berlin Int'l, East Germany	6080	9730		
2200-2230	T,F	Radio Budapest, Hungary	6110	9585	9835	11910
			15160			
2200-2230		Radio Moscow, USSR	7115	9490	9835	11675
			11790	11950	11840	12050
			12060	13605	15425	15560
2200-2230	S	Radio Norway Int'l, Oslo	11850	15180		
2200-2230		Radio Prague, Czechoslovakia	6055			
2200-2245		Radio Cairo, Egypt	7710	9900		
2200-2250		Radio Baghdad, Iraq	15230			
2200-2255		RAE, Buenos Aires, Argnetina	11710	15345		
2200-2300		(US) Armed Forces Radio and TV	6030	11790	15345	15430
2200-2300		BBC, London, England	5975	6005	6175	6180
			7325	9410	9590	9915
			12095	15070	15260	
2200-2300		CBN, St. John's, Newfoundland	6160			
2200-2300		CBU, Vancouver, British Colombia	6160			
2200-2300		CFCF, Montreal, Quebec	6005			
2200-2300		CFCN, Calgary, Alberta	6030			
2200-2300		CHNS, Halifax, Nova Scotia	6130			
2200-2300		CKWX, Vancouver, British Colombia	6080			
2200-2300		CFRB, Toronto, Ontario	6070			
2200-2300		(US) Far East Network, Tokyo	3910			
2200-2300		King of Hope, Southern Lebanon	6280			
2200-2300		KVOH, Rancho Simi, California	17775			
2200-2300		KYOI, Saipan	15405			
2200-2300		Radio Australia, Melbourne	15160	15240	15320	15395
			17795			
2200-2300		Radio for Peace, Costa Rica	21555			
2200-2300		Radio Havana Cuba	7140			
2200-2300		SBC Radio One, Singapore	5010	5052	11940	
2200-2300	M-A	Superpower KUSW, Utah	15690			
2200-2300		Voice of America, Washington	15120	15185	15290	15305
			15320	17740	17820	
2200-2300		Voice of Free China, Taiwan	15440	17845		
2200-2300		WCSN, Boston, Massachusetts	15300			
2200-2300		WHRI, Noblesville, Indiana	9770	17830		
2200-2300		WINB, Red Lion, Pennsylvania	15185			
2200-2300		WRNO, New Orleans, Louisiana	13760			
2200-2300		WYFR, Oakland, California	11830	15170	15175	15220
			15566	21525		
2200-2300		WYFR Satellite Net, California	13695	15375		
2215-2230		BBC, London, England*	11820	15390		
2230-2300	A,S	CBC Northern Quebec Service	9625	11720		
2230-2300		Kol Israel, Jerusalem	11605	12080	13625	
2230-2300		Radio Beijing, China	3985	6165		
2230-2300		Radio Canada Int'l, Montreal	11880	11945	15150	17820
2230-2300		Radio Finland, Helsinki	6120	11945	11755	15400
2230-2300		Radio Jamahiriya, Libya	11815	15450		
2230-2300		Radio Mediterran, Malta	6110			
2230-2300		Radio Polonia, Warsaw, Poland	5995	6135	7125	7270
2230-2300		Radio Sofia, Bulgaria	9700	11950		
2230-2300		Radio Tirana, Albania	7215	9480		
2230-2300		Radio Vilnius, Lithuanian SSR	6100			
2245-2300		All India Radio, New Delhi	6055	7215	9535	9910
			11715	11745		

2300 UTC [7:00 PM EDT/4:00 PM PDT]

2300-2315		BBC, London, England	5975	6005	6175	6195
			7325	9410	9515	9590
			9915	12095	15070	15435
2300-2330	S	KGEI, San Francisco, California	15280			
2300-2330	A,S	Radio Canada Int'l, Montreal	5960	9755		
2300-2330		Radio Mediterran, Malta	6110			
2300-2330		Radio Moscow World Service	7370	9490		
2300-2330		Radio Polonia, Warsaw	5995	6135	7125	7270
2300-2330		Radio Sofia, Bulgaria	9700	11950		
2300-2330		Radio Sweden, Stockholm	9695	11705		
2300-2330		Radio Vilnius, Lithusanian SSR	7205	7400	9640	11790
			13645			
2300-2330	M-A	Superpower KUSW, Utah	15580			
2300-2345		Radio Berlin Int'l, E. Germany	5965	9730	11965	
2300-2345		WINB, Red Lion, Pennsylvania	15185			
2300-2345		WYFR, Oakland, California	9505	11830	11855	13695
			15175	15375	21525	
2300-2350		Voice of Turkey, Ankara	7135	7160	9445	17760
2300-0000		All India Radio, New Delhi	6055	7215	9535	9910
			11715	11745		
2300-0000		(US) Armed Forces Radio and TV	6030	11790		
2300-0000		CBC Northern Quebec Service	6195	9625		
2300-0000		CBN, St. John's, Newfoundland	6160			
2300-0000		CBU, Vancouver, British Colombia	6160			
2300-0000		CFCF, Montreal, Quebec	6005			
2300-0000		CFCN, Calgary, Alberta	6030			
2300-0000		CHNS, Halifax, Nova Scotia	6130			
2300-0000		CKWX, Vancouver, British Colombia	6080			
2300-0000		CFRB, Toronto, Ontario	6070			
2300-0000		(US) Far East Network, Tokyo	3910			
2300-0000		KVOH, Rancho Simi, California	17775			
2300-0000		KYOI, Saipan	15405			
2300-0000		Radio Australia, Melbourne	15160	15240	15320	15395
			17795			
2300-0000	M-F	Radio Canada Int'l, Montreal	5960	9755		
2300-0000		Radio for Peace, Costa Rica	21555			
2300-0000		Radio Jamahiriya, Libya	11815	15450		
2300-0000		Radio Japan, Tokyo	11800	15195	17810	
2300-0000		Radio Moscow, USSR	6170	7115	7195	7230
			9490	9530	9720	9765
			9890	15240		
2300-0000		Radio Thailand, Bangkok	9655	11905		
2300-0000		WCSN, Boston, Massachusetts	15300			
2300-0000		WHRI, Noblesville, Indiana	9770	17830		
2300-0000		WRNO, New Orleans, Louisiana	13760			
2315-2330		BBC, London, England*	11820	15390		
2315-0000		BBC, London, England	5975	6005	6175	7325
			9515	9590	9915	12095
			15435			
2320-2325	M-A	Radio Prague, Czechoslovakia	6055	9630		
2330-0000		Radio Korea, Seoul, South Korea	15575			
2330-0000		Radio Tirana, Albania	6200	7065	9760v	
2330-0000		Voice of America, Washington, DC	17735	17820		
2330-0000		Voice of Vietnam, Hanoi	9840	12020	15010	
2335-2345	M-A	Voice of Greece, Athens	9395	9425	11645	
2345-0000		BBC, London, England*	3915	6080	7180	9580
2348-0000		WINB, Red Lion, Pennsylvania	15145			

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Lawrence Magne

Editor-in-Chief
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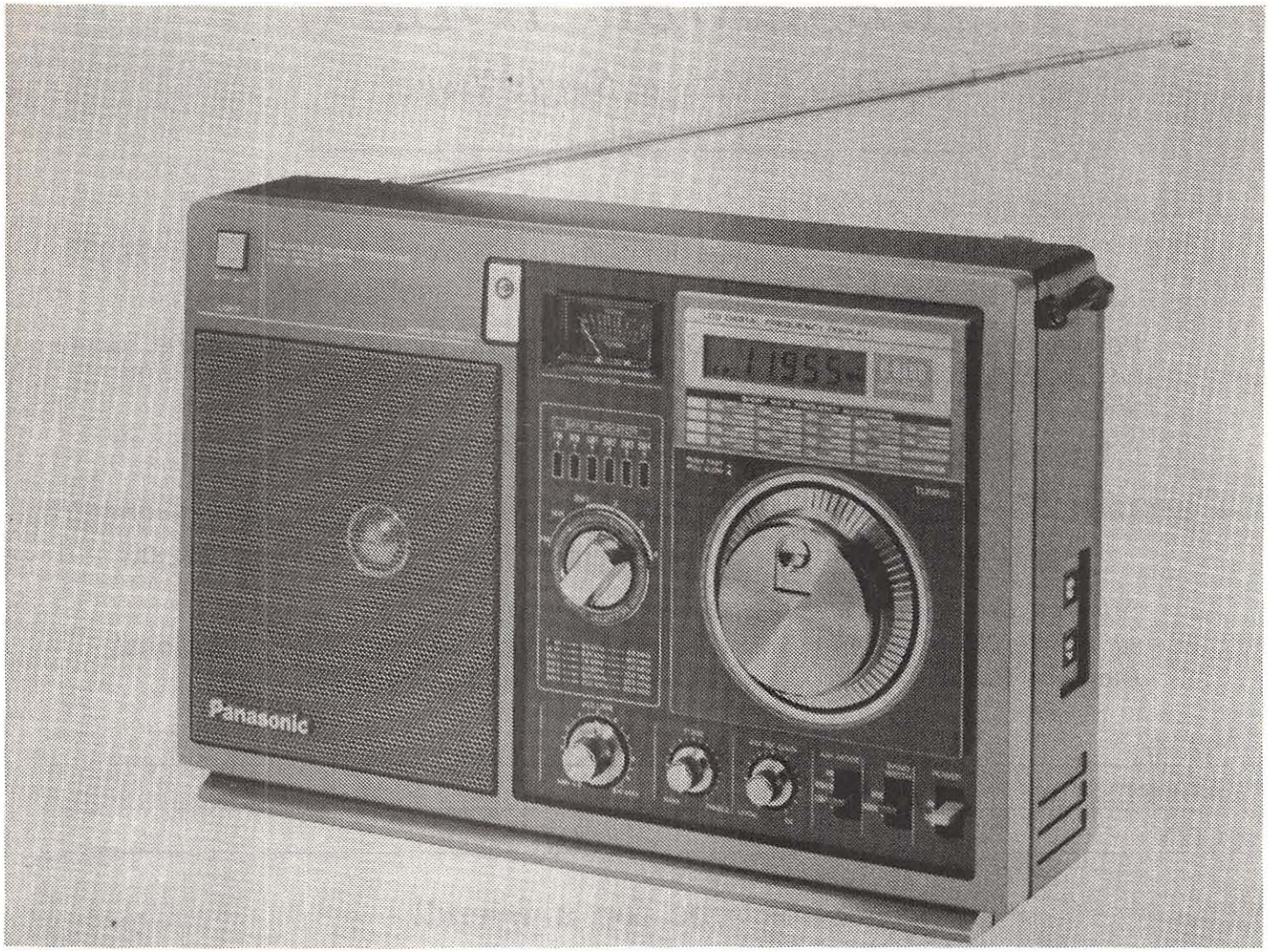

PANASONIC RF-B300

World Band Radio is having an important anniversary. Eleven years ago, Panasonic introduced a very important portable, the RF-2800 (also sold as the National DR-280. Why all the hoopla over an eleven year old radio? The RF-B300 was the first successful *digital* portable on the consumer market and it helped change shortwave listening from something hardly anybody did to the growing and popular pastime it is today.

Basic Design Goes Back to 1977

The Panasonic RF-2800 is a hard set for me to forget, because it was when it came out -- back in 1977 -- that I had first started doing regular reviews of shortwave equipment. Nobody had been doing these kinds of reviews until then -- partly, I suppose, because there wasn't a whole lot to review. And what few sets there were -- Zenith Transoceanics and the like -- tended to perform poorly.

But the '2800 was different. Not only did it boast an accurate LED readout, it also had double conversion to reduce image interference, two bandwidths for flexible selectivity, superior audio *and good FM performance*. Granted, it was a bit large for air travel, but on one occasion I took a '2800 on a six-week trek through much of Europe and the Middle East. The only difficulty I had was that just about everyone I ran into -- cab drivers, waiters, fellow passengers, and the like -- tried to buy it off me for much more than what I paid for it!

Back then, I rated it as the best portable available. The only serious criticism was that both bandwidths were a bit wide. So, a year and a half later Panasonic took note and replaced the '2800 with the RF-2900. The two sets were all but identical, but the '2900 had narrower bandwidths and a fluorescent readout in place of LED's. The new version was a great success and stayed on the market for years.

'B300 Incorporates Changes

More recently, the '2900 was superceded by the Panasonic RF-B300, sold in Asia as the National B300. In many ways it's the same

set as the '2900, but the cabinet has been redesigned and some controls changed. For example, reception of single-sideband signals has been made more logical, which is a plus. But the bass and treble controls on the '2900 have been replaced by a single tone control on the 'B300, which is a step backwards.

Otherwise, the same virtues and vices are evident. The virtues include good audio, even with the cheapened tone control, and dual selectivity. There's also a dial light to help with nighttime listening and a genuine signal-strength meter.

But against this are the earmarks of a receiver designed in another era. Although the '2800 was years ahead of its time when it first came out, by now the basic design is getting a bit long in the tooth. For example, there are no programmable channel memories or keypad tuning. Indeed, to tune from one band to the other requires adjusting a switch, then pushing the tuning knob in for fast tuning, then pulling it back out again for fine tuning. In this regard, the '2900 was just a bit handier, because it had a spinner on the main tuning knob, whereas the 'B300 has only a finger detent.

Another problem affecting the '2900 and 'B300 is mediocre image rejection. The 2 MHz IF causes signals to "repeat" 4 MHz lower down, so a signal, say, on 7275 kHz tends to reappear at lower strength on 3275 kHz. Of course, if you're trying to listen to 3275 kHz, this can be pretty frustrating. Too, although single-sideband reception is more logical, it's not appreciably better, because the set tends to drift off frequency somewhat.

Superior Construction

In some countries the Panasonic RF-B300 comes with a two-year warranty. This makes sense, inasmuch as Panasonic's world band portables are usually better put together than most. But still, the frequency-of-repair record on the earlier '2800 and '2900 versions seems to have been above average.

Pick Up a Bargain

In all, the RF-B300 is a frill-free world band portable with superior audio. What makes it particularly interesting is that, like its 'B600 sibling, it is being dropped from Panasonic's line worldwide. In some countries, such as the US, there are still a number of samples in warehouses, so it's entirely possible that the 'B300 will be heavily discounted between now and early 1989. The suggested retail price in the US is awfully steep -- $299.95, with the dealer cost being about two-thirds that amount. So, if you can find it for substantially under dealer cost -- say, around $150 or so -- you could have yourself a real bargain.

The only thing that really compares with the 'B300 is the Magnavox D2935, which sounds similar. The '2935 is currently selling for between $180-200 at many outlets. Price aside, the main difference between the '2935 and the Panasonic RF-B300 is that the 'B300 is more of a traditionalist's radio -- no computerized controls and the like. Also, the Panasonic has two bandwidths to the '2935's one.

mt

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Youngstown, OH 44515

The Uniden/Bearcat BC-560XLT/400 Scanner

A quality scanner for $100? Sounds too good to be true, doesn't it? But the newest release from Uniden proves that it can be done and done nicely.

The Bearcat BC-560XLT and its identical twin, the BC-400XLT, are the two latest additions to the already excellent line of Uniden scanners. Apparently designed to appeal to the "entry-level" scanner crowd, this little radio has many exciting features. And it's quite a bargain for the price. In fact, the '560XLT actually performs as well as (and possibly better than) many other scanners costing twice to three times as much.

What Is It?

The BC-560XLT is a 16 channel mobile/base scanner featuring a two digit, red LED readout channel indicator. It's housed in a rugged metal case. Included in the package is a telescoping whip antenna (for base use should the owner desire), a mobile power cord, and mobile mounting bracket.

But wait! That's not all! The '560 also has features not usually found in scanners in this price range, such as instant weather channel reception (at the touch of a key), a channel 1 priority feature and an LED channel lockout indicator. Measuring a scant 5-1/2" x 6-7/8" x 1-3/4" in size, it can easily be mounted in even the most cramped compact car. You'll probably want to find a prominent place for it, though. The set presents an extraordinarily handsome appearance with its dark grey face and black vinyl-coated cabinet.

Sixteen in Fifteen

The '560 scans its 16 channels at a rate of 15 per second. The built-in two second delay, however, allows the scanner to "linger" on any active channel long enough to prevent missed replies to radio traffic found there. Also, a capacitor-type memory backup allows the radio to retain programmed channels for up to 60 days without a battery. The power requirement is 13.8 volts dc which can be provided by an automobile's electrical system or by the use of an optional wall-mount transformer.

Programming a Snap

Programming the '560 is a snap. One merely steps to the channel where the desired frequency is to be entered (either by stepping through preceding channels manually or by direct entry of the channel number in question), enters the frequency by numbers, presses the "E" (enter) button and, *voila!* The remaining 15 channels are, of course, programmed in the same fashion.

The '560 does not display its contained frequencies by direct frequency readout. That is, each channel is represented on the two-digit LED display by its number. Channel 1 reads as "1", channel 2 as "2", etc. The operator must remember which channels contain what frequencies. But with only 16 available slots, this presents no real problem.

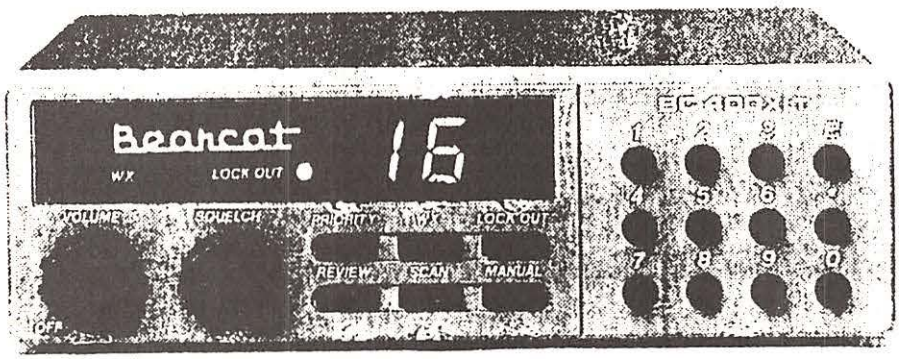
Programmed frequencies can be checked with the "review" button. After programming each channel (or even all 16), one merely steps to the channel to be checked and presses it. The frequency in that channel is then displayed one digit at a time with a "dash" (-) signifying the decimal between MHz and kHz readout. For example, reviewing a programmed frequency of 155.130 via the review button causes the scanner to read out a display like 1 5 5 - 1 3 0. After showing the frequency digit by digit, the channel number is again displayed.

Individual channels can also be locked out (skipped). A small red LED to the left of the frequency/channel display indicates such when locked out channels are reviewed or manually stepped through. Delay time of the scanner (two seconds) is built in at the factory and cannot be altered. The delay is also for all channels and cannot be changed or turned on or off on any given channel (as can be done with most scanners). It does not appear to be an adverse feature, however, and is easily "lived with."

Instant Weather

A nice feature of this scanner is the "instant weather" provision. By merely pressing one key, the radio scans all National Weather Service frequencies between 162.400 and 162.55 MHz and automatically finds the one(s) in use in your area. A second small red LED to the left of the channel number display indicates when this feature is in use.

For those who wish to monitor one particular channel of interest, the priority feature is just the thing. The main frequency of interest is entered into channel 1 and when the priority feature is activated (by pushing a button on the scanner), channel 1 is "sampled" once every two seconds during the scanning sequence.



If any radio traffic appears there, the scanner automatically "overrides" all other traffic and monitors channel 1's traffic until it ceases. After waiting another two seconds (the scan delay time), the '560 begins normal scanning again until traffic again shows up there. The sequence is then repeated (infinitely) until the priority feature is deactivated by pressing the priority button a second time.

Good Frequency Coverage

Both radios (the BC-560XLT and the '400XLT) both possess very good frequency coverage. In the low VHF band, coverage ranges from 29 to 54 MHz. In the VHF high band it's from 136-174 MHz and in the UHF band, 406 to 512 MHz. Also, add in the auto weather range (162.400-162.550 MHz) and a lot of territory is covered.

The '560 does not lack in the audio department either. Boasting a very respectable three watts of loudspeaker power, one is hard-pressed to find many situations where the 560 could not be heard -- perhaps not when standing behind a jet aircraft idling on a runway, or when standing in a building under demolition, but not in too many other situations! The audio is clean and readable, too.

Because the radio was designed to be primarily a mobile unit, however, the speaker is mounted on the bottom of the cabinet. As a result, when the unit is used as a base station, the unit lays on its speaker, effectively muting the audio. A set of stick-on rubber feet could remedy the problem.

Sensitivity

The sensitivity of the '560 is nothing short of excellent. In a base environment, it easily receives stations 40 to 50 miles away with only its telescopic whip antenna. Attaching the '560 to an outdoor antenna increases that range to a degree comparable to or exceeding many $400 scanners. Even weak signals (such as mobiles and handi-talkies) can often be heard clearly at great distances.

The scanner, as mentioned before, was designed primarily for mobile use, and therefore does not come with a power supply to operate it in a base environment. Uniden does, however, offer an optional wall-mounted plug-in transformer under their part number AD-58OU for around $15. But just about any 12 volt power converter with 350-500 mw capacity and a positive "tip polarity" on the standard power connector plug will work. (You can get one with a set of "universal adapters" from Radio Shack for $10.95 or from Grove for $9.95.)

Other optional accessories available from Uniden include a mobile antenna (part number BC-AT1) and extra whip antenna (part number AT-034), just in case yours wears out.

Overall Reaction

About the only thing which might inhibit someone from purchasing this otherwise excellent scanner is its lack of a complete frequency readout (previously described) and the fact that it has no "search" capability. However, at $100.00 the '560 is a bargain, no matter what.

The Last Word

If you want an excellent, low-cost mobile/base scanner, then this is the one. It performs right up there with the more expensive scanners, and has a lot of features -- all well-designed and useful. Sensitivity is nothing short of excellent, and one is hard-pressed to believe that this little gem has so many things "going for it."

For the beginner or the "seasoned" scanner/monitoring enthusiast, the BC-560 has a lot to offer. It is a fine radio and one very much worth owning -- not to mention BIG on performance!

mt

Grove SR1000 Receiver Update

A few months back *MT* mentioned the ongoing development of a sophisticated, wide-frequency-coverage receiver at the Grove Enterprises lab. Many readers continue to inquire as to the progress on this receiver.

While the introduction date has been moved back slightly (end of the year), specifications continue to improve. Covering 100 kHz-1000 MHz with no gaps and including all-mode detection and CRT spectrum display of all signals in a 10 MHz bandwidth, the Grove SR1000 will also have 1024 memory channels to store frequency and mode!

Grove tells us they are still trying to keep the price low enough to serve serious SWLs and scanner enthusiasts as well as the government and professional countermeasures market. A complete description will appear in the November Grove catalog, but advance information is available for an SASE sent to Grove Enterprises, PO Box 98, Brasstown, NC 28902.

Doug DeMaw

P.O. Box 98
Brasstown, NC 28902

A Beginner's Look at Transmitter Basics

Have you ever experimented with transmitter circuits? Perhaps now is the time to try your hand at generating RF power. There is nothing difficult about building a small transmitter, and the cost of such a project is minimal if you are willing to work with power levels that are less than a watt or two.

Let's examine some fundamentals that may be applied to transmitter design for low, medium or high frequency. Although many of the principals we will discuss are useful also at VHF and UHF, there are some design rules that are very special at those higher frequencies. We will discuss them another time.

I chose the AM broadcast band in order to provide a test frequency that is available to all persons: You do not need an FCC license to operate in the AM band, provided you comply with the stipulations set forth in Part 15 of the rules. Notably, the antenna (inclusive of the feed line) cannot exceed 3 meters in length. Also, the maximum DC input power to the last stage of the transmitter cannot exceed 0.1 W (100mw). Finally, you may not cause interference to any licensed AM broadcast frequency.

Select a transmitting frequency that is not apt to interfere with the reception of local stations. Best results are usually obtained when we use the high end (1200 - 1600 kHz.)

How Far Can the Signal Carry?

My experience while using 100 mw of dc input power, indicates 1/4 of a mile is typical for solid reception. But, I have copied it as far as 1/2 mile when using a good portable radio. The limiting factor is the short antenna. The 3 meter restriction limits the overall antenna length to only 10 feet. Use of a loading coil in the antenna is prohibited, since the wire on the coil must be counted as a part of the overall antenna length.

Uses for a 100-mw BC-Band Transmitter

There are some practical applications for a transmitter of this type. For example, a modulator can be added to permit the use of a microphone. The transmitter can then be used as a crib monitor for a baby's room, as an intercom (two units needed) or as a phono transmitter. The latter application would enable you to modulate the transmitter with a tape deck or turntable, permitting you to listen to your favorite music while working in your garden or yard on a portable radio.

Our circuit example this month shows how we may use a tone modulator to generate MCW (modulated continuous wave) allowing you to employ the transmitter for code practice with a nearby friend.

Analyzing the Transmitter Circuit

Figure 1 shows the schematic diagram of our study project. Q1 is the heart of the system. This bipolar transistor operates as a Pierce crystal oscillator. Y1 is a crystal for the frequency of your choice. It should be selected in accordance with the earlier discussion of this subject. C1 and C2 are feedback capacitors. They ensure oscillation of Y1. C1 may be varied in value to assure reliable oscillation of Y1.

Some crystals are less active than others, and this may require experimentation with the value of C1. You will find that C1 values between 27 and 100 pf are typical for crystals in the 1000-1600 kHz range.

Generally, the collector of a Pierce oscillator has an RF choke or a resistor in place of T1 (Fig. 1). I use a broadband toroidal transformer in this part of the circuit. It allows me to use a secondary winding to feed energy to the base of the amplifier transistor, Q2. The primary of T1 acts as an RF choke, since it is not tuned to the operating frequency. Q1 and Q2 operate continuously. The tone modulator is keyed instead of the RF stages.

A Class-C amplifier (Q2) follows the crystal oscillator. A low-impedance secondary winding is used on T1 to provide a match between the collector of Q1 and the base of Q2. The Q2 base presents an impedance between 10 and 25 ohms, depending upon the level of the base drive.

You will note that R1 is shown in dashed lines. It is an optional component, and is used only if Q2 has a tendency to self-oscillate. The range of resistance values for R1 is between 10 and 33 ohms, typically. The smaller the ohmic value of R1 the lower the output power from Q2, since a greater part of the driving power from Q1 is dissipated in R1. Use the highest R1 value that ensures Q2 stability.

The collector impedance of Q2 at 70 mw is 1028 ohms. This is derived from $Z(\text{ohms}) = Vcc^2/2Po$, where Vcc is the collector to emitter voltage, and Po is the transmitter output power. We have assumed an efficiency of 70% for Q2, which equates to approximately 70 mw of output power. The collector of Q2 is tapped toward the +12-V end of L1 in order to prevent the collector load impedance from degrading the Q of tuned circuit C3/L1. This aids the stage efficiency and reduces harmonic output currents. The 10-ohm series resistor at the bottom end of L1 serves as a protective device for Q2. In the event thermal runaway or self-oscillations should occur causing Q2 to draw excessive current, the resistor will limit the current.

Note that the 3-meter-long antenna connects to the top of L1 via a 0.1 uF blocking capacitor. The latter component prevents the +12-V line from short-circuiting, should the antenna wire come in contact with the circuit ground. Another 0.1 uF capacitor is present between the top of L1 and the stator of C3. This prevents short-circuiting the +12-V line should the rotor and stator plates of C2 come in contact with one another.

The terminals to which jumper wire W1 is connected may be opened for the purpose of metering the dc current taken by Q2. You may insert a milliammeter at the W1 jumper point. The collector current for Q2 should be 9.1 ma for 100 mw of dc input power. This is based on 11 volts, collector to emitter, at Q2 (there is a 1-V drop across the 10 ohm protective resistor).

In the event the current for Q2 is low, add a turn of wire to the secondary of T1. If the current is too high for the legal 100 mw power level, remove a turn from the T1 secondary winding. The drive to Q2 may be increased or decreased slightly in this manner. You may also reduce the drive to Q2 by adding the appropriate value of resistor to the circuit at R1.

C3 tunes L1 to resonance at the Y1 crystal frequency. Do this with the antenna connected to L1, as the 10 foot wire adds stray capacitance to the C3/L1 tank circuit. Tune for maximum output power by monitoring the signal with an AM receiver. There will be a small dip (reduction) in Q2 collector current when the tuned circuit is resonant. You may use a dc milliammeter to determine resonance. Connect it in place of jumper W1.

Tone-Modulator Circuit

A 741 op amp is used as a tone oscillator. It is labeled U1 in Fig. 1. It generates a tone of roughly 1000 Hz. The transmitter (Q1 and Q2) operate continuously, but U1 is keyed on and off to produce MCW. The keying is accomplished by PNP switch Q3. You can eliminate Q3 and simply key the +12-V line to R2. This will require that the key jack be isolated from the circuit ground with insulating washers.

The form of modulation used in Fig. 1 is called *base modulation*. Normally, a solid-state AM transmitter has the modulation

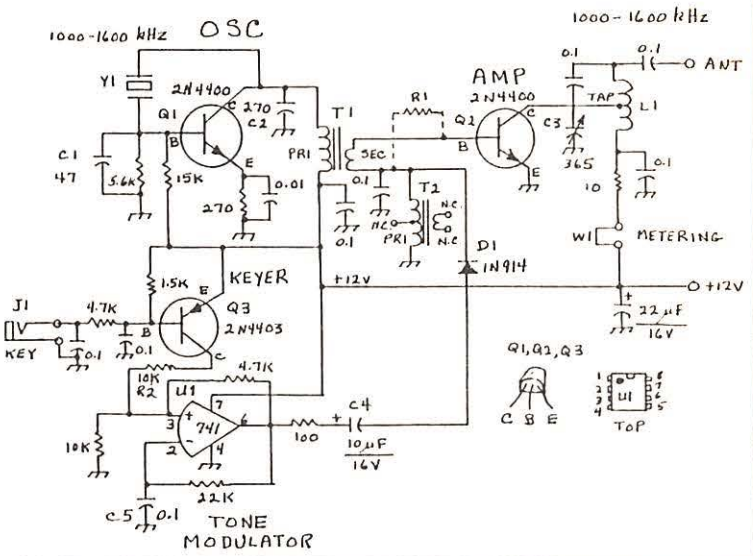


Fig. 1 -- Schematic diagram of a 100-mw transmitter for use in the standard AM broadcast band. Fixed-value capacitors are disc ceramic. Polarized capacitors are electrolytic or tantalum. Resistors are 1/4-W carbon-composition units. Decimal-value capacitors are in uF. Others are in pF. K = 1000.

C1,C2,C4 -- see text.
C3-- Air variable capacitor or mica trimmer.
D1-- Small-signal switching diode, 1N914 or equiv.
J1-- Two-circuit phone jack.
L1-- 82-uH inductor. Use 90 turns of no. 28 enam. wire, closewound, on a 1 inch piece of 3/4 inch PVC pipe.
R1-- See text.
T1-- Broadband toroidal transformer. Primary has 1 mH of inductance. Use 44 turns of no. 28 enam. wire on an Amidon Assoc. (12033 Otsego St., N. Hollywood, CA 91607) FT-50-43 ferrite toroid. Secondary has 10 turns of no. 28 enam. wire over primary winding. Toroid core has 0.5 inch OD and permeability of 850.
U1-- 8 pin DIP op amp, type 741.
W1-- Jumper wire.
Y1-- Fundamental crystal, surplus computer type, for frequency of your choice (see text).

applied to the collector circuit of the driver and PA stages.

Observe that D1 is in the audio line to the base of Q2. It passes only the positive audio pulses while blocking the negative half of the square-wave output from U1. This causes Q2 to be forward-biased by the positive audio pulse, causing upward swings of output power from Q2. Modulation is applied across an audio inductor, T2 which is the primary of a transistor radio audio-output transformer. The T2 primary winding provides a dc return path for the secondary of T1, but it prevents the audio pulses from being lost to ground at the cathode end of D1. The center tap of the T2 primary and the secondary winding are not used.

The modulation level from U1 may be reduced by making C4 smaller in value. It is possible to use as little as 0.1uF of capacitance at C4, depending upon the exact output level from U1. Use only enough modulation to provide a clean, well modulated output signal from Q2. You may change the pitch of the tone by experimenting with the value of C5. Smaller values provide a higher frequency.

Voice Modulation May be Used

You can transmit music or voice information by replacing U1 of Fig. 1 with a circuit that is suited to use with a microphone or tape-deck output. Fig. 2 illustrates the changes necessary.

In Fig. 2 I have shown part of Fig. 1 to indicate how the modulator changes are made. The keying transistor of Fig. 1 has been deleted. An audio-amplifier IC, U1, has replaced the op amp of Fig. 1. R1 of Fig. 2 is the audio-gain control. It determines the modulation percentage of the transmitter. It is adjusted for minimum received-signal distortion, consistent with a high modulation percentage. A low-impedance microphone (600-1000 ohms) or the output of a tape deck may be plugged into the mike jack at the lower left of Fig. 2.

Construction Notes

This project can be built easily on perforated circuit board, or you may elect to use the one-shot board technique that we considered in last month's article. I suggest you build this circuit one stage at a time, commencing with Q1 of Fig. 1. Get the oscillator running and checked out, then add Q2 and ensure that both stages are functioning correctly. The modulator and keying circuit are added last. You can use the dead-bug (IC on its back construction method when wiring U1. Use an IC socket for this purpose. This will enable you to use the 741 or LM386 later, for other projects.

All RF and component leads must be as short as practicable. Long leads introduce unwanted stray inductance, and this can cause low stage gain and self oscillations.

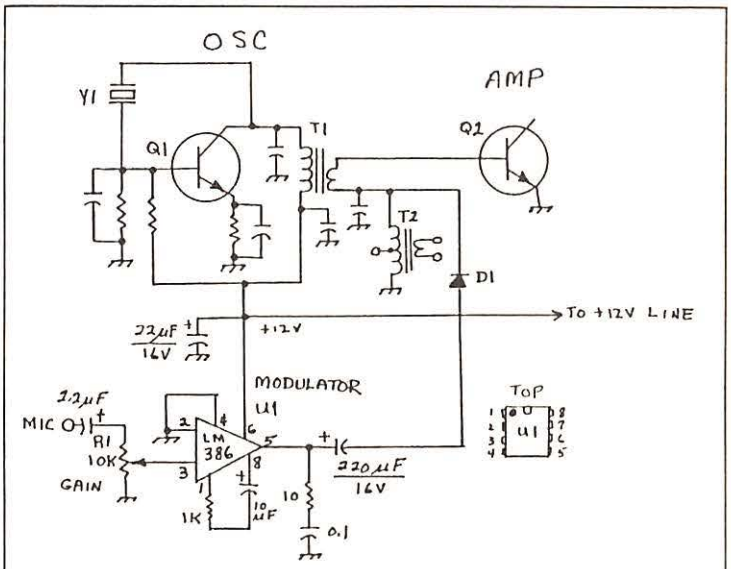


Fig. 2 -- Schematic diagram that shows the changes to the Fig. 1 circuit for using voice or music transmissions. Q3 of Fig. 1 is eliminated. R1 is a linear or audio taper carbon control. U1 is a National Semiconductor Corp. Audio amplifier Ic, 8 pin DIP.

You may use transistors other than 2N4400s for Q1 and Q2. For example, 2N2222As are good substitutes. Any NPN transistor that has characteristics similar to a 2N4400 or 2N4401 will perform nicely in the circuit of Fig. 1.

Closing Remarks

This month we have examined a simple type of transmitter as part of your learning process. Build one of the circuits in this article. You will gain valuable experience, and have fun too. Be sure to connect an earth ground to the circuit ground; it will improve the signal coverage

Do not attempt to increase the range of this transmitter by using a long antenna or increasing power output. A long antenna can't be attached to L1 of Fig. 1 without ruining circuit performance. Also, any violation of the FCC part 15 rules will be discovered in short order, and "The Man" will be knocking at your door! Observe the FCC rules and have fun.

mt

1.8 to 30 MHz Tunable Receiver RF Preamp

by D.A. Michael

This simple RF preamp will provide selectivity and gain for your shortwave receiver. The gain is switchable so as not to overload the receiver it is connected to. The frequency range covered is 1.8 to 30 MHz in three bands.

I use it to boost the signal when using my 300 foot Beverage receiving antenna. It also comes in handy for boosting the gain with some poorer antennas I have experimented with. It could be used with a small loop antenna, too.

Sometimes the extra selectivity and not the gain is more help. When using it just for selectivity keep the gain switch on low. I have even used it with a simple homebrew crystal diode detector to receive some of the stronger shortwave broadcast stations.

The preamp can also be used as an active antenna by hooking a short wire or whip to the binding post provided for this purpose. The wire or whip should be less than ten feet long and hooked directly to the post with no feed line. It is surprising how many signals come in at very good signal levels this way.

The wire or whip and preamp should be near a window if you live in an all metal building. Do not have another antenna hooked to the 50 ohm input when using it as an active antenna. Likewise, remove the wire or whip when using the 50 ohm input to decrease noise pickup.

House the preamp in a metal box (photo 1). Note the ground leads of the antenna coupling coils are directly connected to the input jack ground (triangle ground symbol). All other grounds are connected to a small piece of copper circuit board used to build the amplifier on.

I built my circuit using "ugly" point to point wiring (see photo 2) where all the ground points are soldered to the blank copper and the other leads are hanging in air. I mounted the antenna coils on a small rotary switch which is used as the band switch (photo 3).

mt

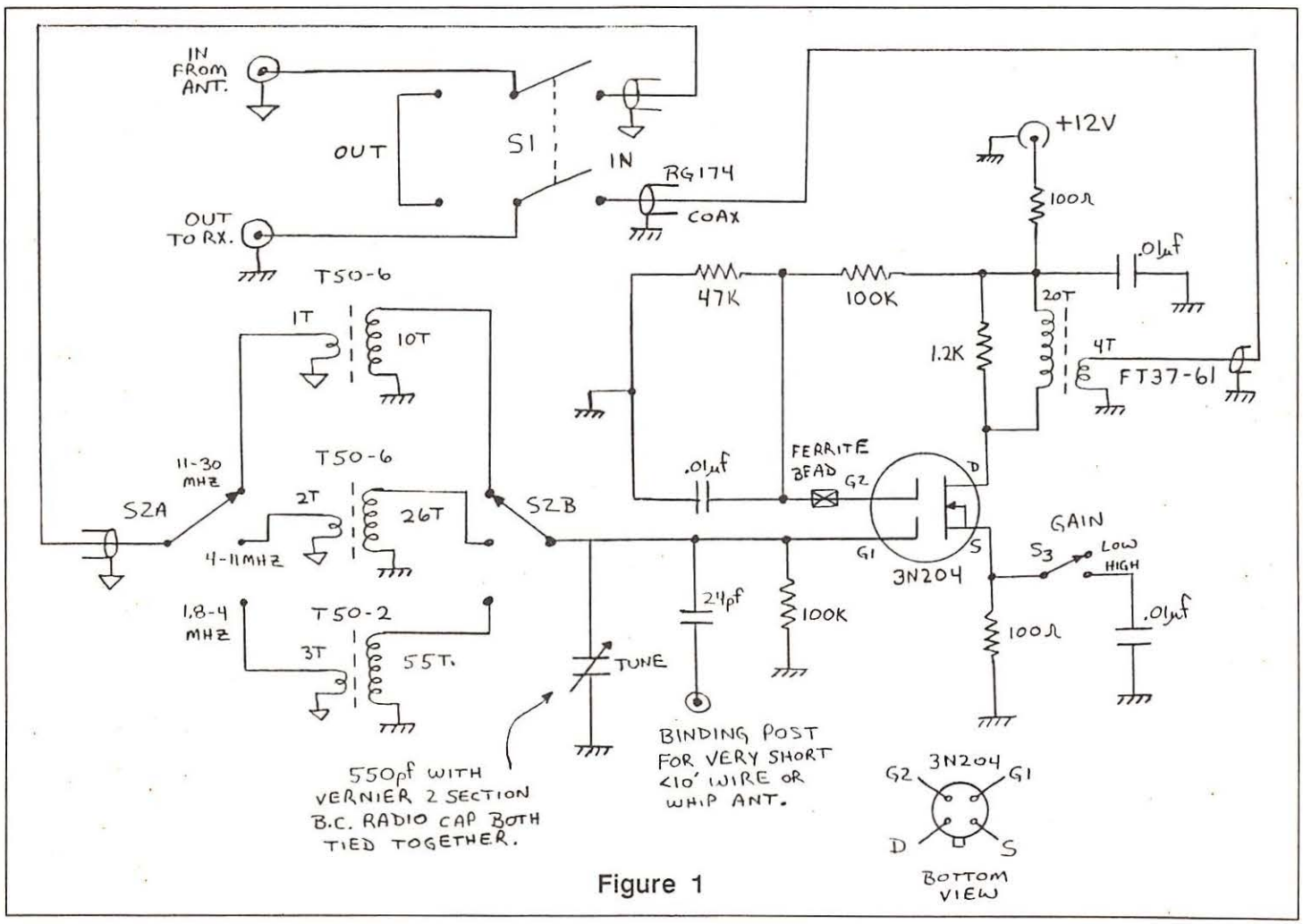


Figure 1

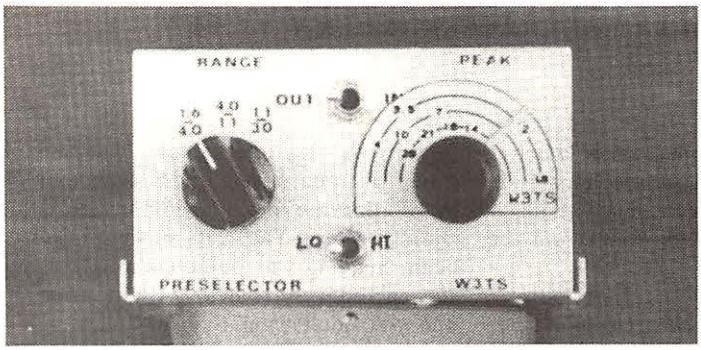


Photo 1

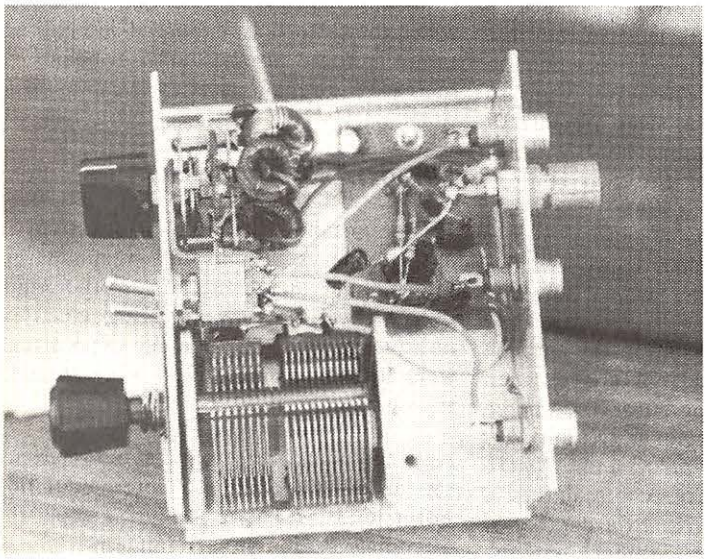


Photo 2

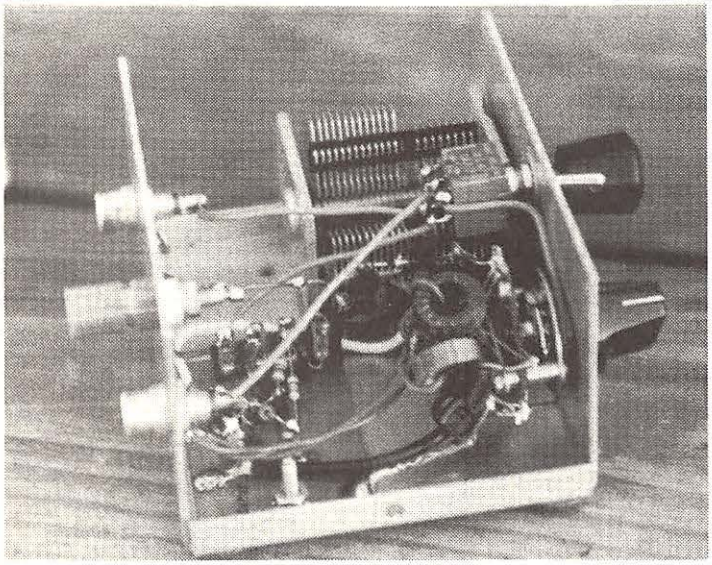
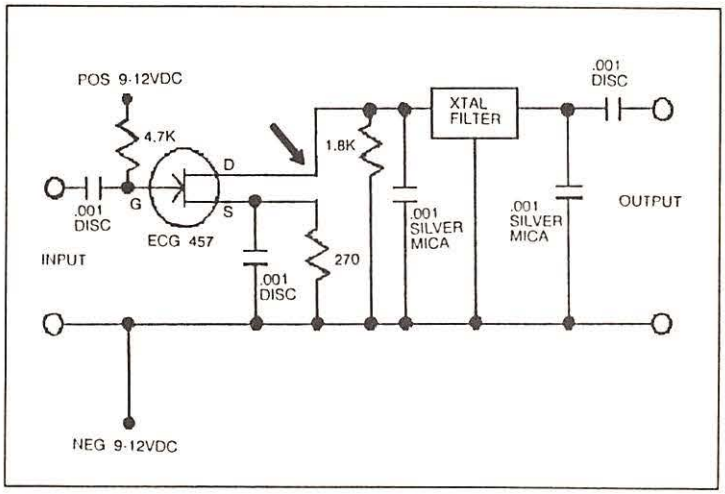


Photo 3

CORRECTION

Remember this schematic drawing from last month's article by Pete Haas on installing 455 kHz filters? We made an error in reproducing his diagram, which most of you probably caught. Below is the corrected version, with the arrow pointing to the change.



Projects for Experimenter's Workshop, while reviewed by our Technical Editor, are submitted by readers and remain experimental.

W. Clem Small, KR6A, CET

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Weybridge, VT 05753

Just what is an antenna, anyway?

There are a variety of definitions to be found for the term "antenna," but I have yet to see an improvement over the one which reads, "An antenna is a device for radiating or receiving electromagnetic waves."

As I just implied, I like that definition. But it is a very basic definition. It has to be so that it will fit all antennas. But, since it is so basic and general, it doesn't tell us anything about the differences to be found between various antennas which do more than just "radiate or receive." So, let's enlarge on the basic definition of "antenna" this month, and consider some of the other things an antenna can do besides radiating and receiving.

Signal "Amplification"

One of the most useful things an antenna can do is to "amplify" the signal which it receives or transmits. That's right, some antennas make the signals which they receive or transmit stronger than the same signal would be with a comparison antenna (usually a halfwave dipole). Yes, this gain in signal strength can be had for just the cost of a piece of wire, properly arranged. The Bruce array, and the rhombic beam are examples of wire antennas which can yield respectable levels of signal gain in this fashion.

Sometimes a bit more complicated than the wire beams are the compact beams, such as the Yagi-Uda. A three element Yagi-Uda beam will give a gain of 8 dB, which is approximately the same as amplification of signal strength by a factor of six. Such gain antennas are able to increase the strength of signals which they receive by concentrating the radiation and reception of signal strength so that, in certain directions, the signal is stronger than that of the comparison antenna! The Yagi-Uda's pattern is shown in Figure 1B.

Note that the "signal amplification" discussed above exists only in certain directions from the antenna. In fact, you will note that some directions lose in signal strength as we shift from a dipole to a Yagi-Uda. For instance, a station at point "X" would receive signals from the dipole better than from the Yagi-Uda, although a station at point "Y" would receive much stronger signals from the Yagi-Uda than from the dipole.

Selecting Among Stations Without Tuning

If you want to select between the different stations on a band, you turn your receiver's tuning knob, right? Well, most of the time that's true. But, what of the times when the two stations between which you want to select are on exactly the same frequency? Then, of course, the tuning knob will not separate them. But, if the two stations between which you want to select are in different directions from your antenna site, it is often possible to select between those stations by means of the proper antenna!

Note that this selecting-stations-by-antenna is just what we pointed out above, when comparing signal strength for the dipole versus the Yagi-Uda at points "X" and "Y". For instance, if stations at "X" and "Y" were on the same frequency, you could still "tune-out" the one at "X," to a degree, by using the beam antenna rather than the dipole, because the beam antenna is less responsive to signals from "X" than those from "Y."

If you have only one antenna, you can still "tune" out one station and receive another by rotating the antenna. For instance, you could rotate a Yagi-Uda beam so that its beam heading was pointed directly at the station you want to hear, or away from the one you don't want to hear.

Many monitoring enthusiasts, scanner buffs, and hams use rotatable beams for the gain and selectivity between directions which they afford. Commercial and military radio systems also often use beams to increase the reliability of their communications.

When Noise Annoys

It is important to realize that directivity in an antenna is also useful in eliminating interference caused by static or other kinds of electrical noise. Interfering electrical noise is reduced, just like any other signal, when the beam is pointed away from its source.

And the same directivity can sometimes save us from problems of intermodulation distortion if we rotate the beam to put the offending station in a minimum-response position with respect to our antenna's reception pattern.

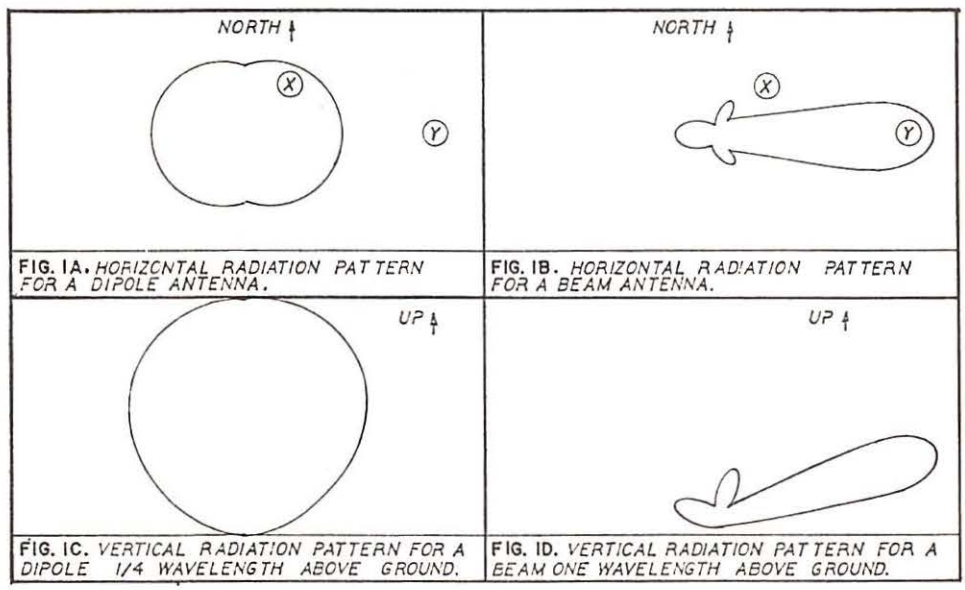

FIG. 1A. *HORIZONTAL RADIATION PATTERN FOR A DIPOLE ANTENNA.*

FIG. 1B. *HORIZONTAL RADIATION PATTERN FOR A BEAM ANTENNA.*

FIG. 1C. *VERTICAL RADIATION PATTERN FOR A DIPOLE 1/4 WAVELENGTH ABOVE GROUND.*

FIG. 1D. *VERTICAL RADIATION PATTERN FOR A BEAM ONE WAVELENGTH ABOVE GROUND.*

The Ups and Downs of the Antenna World

The radiation and reception patterns which we have been discussing are horizontal patterns. Another useful way of showing an antenna's performance is via its vertical radiation pattern. Two different vertical radiation patterns are shown in figures 1C and 1D.

Most DX buffs know that DX signals are likely to come into their antenna location at low angles, close to the horizon. Therefore, an antenna which emphasizes its responsiveness at the lower angles will often be an exceptional performer for reception of DX signals.

Considering the vertical patterns in Figure 1C and 1D, note that we can have signal "amplification" and selectivity between stations by vertical beam orientation, just as when we considered the horizontal beam orientation earlier. Thus, there is gain or "amplification" of lower angle DX signals by the antenna of 1D as compared to the antenna of 1C. And, also for 1D, there is the "tuning," or selectivity, favoring low-angle DX signals, as opposed to higher-angle signals which would be favored by the antenna of 1C.

Doggone!

And, in addition to the antenna functions just discussed, we know from past *Monitoring Times* reports that a low, long-wire antenna can also be used as a dog-run wire to exercise your dog! Yes, the functions of antennas are many, and serve us well, if we will just select the right antenna for the job.

Radio Riddles

Last Month's Radio Riddle: Last month I told you that old timers and antenna buffs often categorize popular nonbeam antenna designs into two groups. Each group is named for the man who devised the basic prototype of the antennas in that group. Marconi is one of these men. But who was the other, and what basic design got him that honor?

Well, Heinrich Hertz, the man who reported his discovery of electromagnetic waves just 100 years ago, devised the halfwave dipole antenna. So, the halfwave dipole is now thought of as a "Hertzian" antenna. In addition, even an end-fed horizontal halfwave wire antenna is sometimes referred to as an "end-fed Hertz." Thus, by these two antenna names, Hertz and Marconi, we honor two great pioneers of radio communications.

This Month's Radio Riddle: Through the appropriate use of antennas we have another technique, not mentioned above, for using the antenna to "tune" or select between different stations on the same frequency. This technique, which does not depend on tuning at the receiver, is commonly used for preventing interference between communications satellites transmitting on the same frequency, but it is also useful in other communications work. What is the basis for this technique?

Find the answer right here next month.

mt

ask bob

Bob Grove, WA4PYQ

P.O. Box 98
Brasstown, NC 28902

***Q.** I live in an apartment and cannot erect an outside CB antenna. Have you any suggestions for an indoor CB antenna? (Frances Renkiewicz, Meridian, CT)*

A. No indoor antenna will work as well as an equivalent outdoor antenna. The simplest indoor CB antenna would consist of a vertical wire 104 inches in length (connected to the coax center conductor) and two 104-inch horizontal wires (connected to the coax shield and running in opposite directions).

The antenna is tested at various points around the room, preferably against a window or outside wall, leaving it in place once an effective location is found as evidenced by highest signal strengths.

***Q.** What are "itinerant" frequencies? (Jay Savage, Salisbury, MD)*

A. As the name might imply, they are available to businesses whose locations and/or operating hours are hard to specify. These would include surveyors, fast food chains, traveling sports events, entertainers and a myriad others.

Frequencies listed by the FCC include 27.49, 35.04, 40.04, 151.505, 151.625, 158.400, 451.800, 464.500 and 464.550 MHz. Several other frequencies often available "off the shelf" from handie-talkie manufacturers include 154.57, 154.60, 462.575, 462.625, 462.675, 464.50 and 464.55 MHz. Power is limited to one watt and an FCC license is required.

***Q.** There is no nearby outlet for National Public Radio. Is it carried by satellite? (David O. Chastain, San Antonio, TX)*

A. A call to NPR in Washington disclosed that their program feed may be heard on Westar 4, transponder 2D.

***Q.** Are there any service technicians competent enough to work on older tube-type radios? (Ed Cichorek, Somerset, NJ)*

A. There sure are. I would first check with some of the larger amateur equipment dealers, some of whom advertise in *MT*. Next, look in the classified ads of amateur radio magazines like *Ham Radio*, *QST*, *73* and *CQ*. Finally, check with one of the older, established TV shops for their recommendations of an experienced tech. Good luck!

***Q.** Is there any way to reduce the "hiss" I hear when monitoring distant signals on my scanner? It is particularly troublesome in the 800 MHz range. (Gene Burton, Chester, VA)*

A. As 800 MHz monitoring becomes more popular, we are hearing that question more often. The "hiss" is actually receiver noise, generated by the components in the radio and magnified by successive stages of amplification. A strong FM signal can quieten this background noise, but weak signals cannot.

Adequate reception of 800 MHz signals is an art as well as a science. It requires either a strong signal or specialized antenna and low-loss coaxial feedline. Signals are weaker at that part of the spectrum due to smaller antennas and vulnerability to absorption by terrain, atmosphere and other obstacles.

Reception at 800 MHz can often be improved through the use of a UHF-TV bow tie and screen antenna rotated 90 degrees for vertical polarization. A TV-type balun transformer will be needed to match the coaxial cable and a low-noise preamplifier may be needed as well.

For best results, use low-loss coax like RG-6/U and a masthead preamplifier. For lengths of line well under 100 feet, an indoor preamp is satisfactory.

***Q.** Why don't scanner manufacturers include S meters? Scanner buffs could use these for logging signals, testing antennas, direction finding and others applications as well. (Mike Tervooren, Morgan Hill, CA)*

A. While top-end, wide coverage, communications receivers (ICOM R7000, Grove SR1000, etc.) utilize signal-strength metering, with one exception (AOR AR-2002), scanners ignore this feature.

The problem is economics: The scanner industry is fiercely price-competitive; the addition of an S meter, while costing the manufacturer about $2-4, would be passed on to the consumer as an additional $10-15.

Interestingly, some scanners are already S-meter capable; the PRO-2004, for example, has an unused S-meter output on pin 10 of its IF chip, but only for wideband FM.

***Q.** Is it possible to prevent "glued-on" antennas from coming off automotive window glass?*

A. Adhesives not only require a clean glass surface with a warm temperature, but pores for additional bonding surface. While new automotive glass is smoother and easier to clean, making it easier to see through, it has fewer pores for adhesive grip.

Automatic car washes often mix waxes with their cleansers, leaving a film which repels the adhesive. Chemicals like "RAIN-X" fill in the pores, encouraging water droplets to drop quickly--and resist adhesive bonding just as quickly. Larsen Antennas recommends the following procedure to prepare the glass surface where the antenna is to be adhesive-mounted.

First, clean the surface with a window cleaner like Windex to remove loose particles; second, scrub with a mild, non-scratch abrasive like Bon-Ami to remove waxes from the

TRICKING THE HX-2200 OUT OF RANGE

One of the most popular sports in the arena of scanner monitoring seems to be discovering keyboard techniques to extend the frequency coverage beyond that stated by the manufacturer.

Formerly, many scanners could be manipulated out of range by combinations of keypad entries, but manufacturers have more recently restricted their intended frequency coverage by undefeatable ROM design.

Gary Churchill of St. John's, Newfoundland, may have discovered a way of fooling the Regency HX-2200. He suggests that in addition to continuous 118-174 and 406-512 MHz, the unit is capable of 800-1200 MHz just by entering 1.200 MHz. Try it.

pores; and finally, clean the area with alcohol (wipes are often supplied with the antennas).

Still, the surface must be warm--between 70 and 90 degrees Fahrenheit--to prevent condensation. It is a good idea to apply a hot hair dryer to the area for a few seconds to encourage evaporation of any residual moisture. Don't get the glass too hot to touch! The adhesive must be applied within a minute to avoid repeated moisture condensation.

Q. I have come across a circuit diagram which calls for a Part number, "NTE618"; what is this brand? (Hugh Hawkins, San Antonio, TX)

A. Several companies package a line of semiconductors for the "MRO" (maintenance and replacement only) industry for equipment repair when it is difficult to get the original brand. NTE and ECG are two of these (and their numbers are interchangeable), most often available from electronics distributors who sell to TV service shops.

Q. Is it possible to get a schematic diagram for my new Bearcat scanner? (P.T. Marshburn, Jr., Wilmington, NC)

A. Most scanner manufacturers make available their schematic diagrams for a fee, generally about $5. Some are free. Your best bet would be to telephone the customer service department of the manufacturer in question to determine their policy. Call Uniden at 1-317-842-2483.

Q. On a frequency of 17970 kHz at 1506 UTC I hear a female voice with a British accent repeating, "Zero...soumi(?)...India...Papa...Four." What is this? (Robert Covington, Baltimore, MD)

A. The high frequency suggests a distant origin, possibly the Mideast. In all likelihood these phonetic broadcasts are similar in nature to the "spy numbers" transmissions and may even be tied to the Israeli Mossad intelligence organization.

Because of their long periods of repetitive identification, it is possible that their prime purpose is to keep the channel open and/or indicate the propagation path between the transmitter and the receiver at that frequency.

Q. What frequency is used by the Marriott Courtyard in southeast U.S.? (George Miller, Marietta, GA)

A. While Marriott hotels nationwide use a variety of frequencies, depending upon availability, in the 151, 154, 463 and 464 MHz ranges across the country, the Courtyard in Homewood, Alabama, uses 464.675.

Q. There have been several referrals to a new luxury radio from Sony. What are the facts?

A. According to Sony's own marketing spokesman, a radio tentatively tagged the CRF350 in Europe awaits a decision this fall as to whether it will ever see U.S. distribution. If it does, it will be the CRF-V21 and list at around $6000.

The luxury, high tech, desktop portable features an LCD panel to show facsimile weather maps and offers extended frequency coverage with multimode reception. At its earliest, it would not appear in the U.S. before next year. There has been speculation that the model is merely a showpiece and will not enjoy mass distribution.

Q. I have seen an ad for a German wide-frequency-coverage portable, the "Pan-Crusader". Is it a good receiver? (Kurt Bohlein, Owls Head, NY)

A. According to our receiver expert, Larry Magne, this radio is marketed under several names including the "Mark 2" which was reviewed just a few months back in MT and is a poor performer.

Q. Where can I get crystals for my old Bearcat scanner? (Don Hallenbeck, Pittsfield, ME)

A. Depending upon the model, some are still available from Uniden customer service, 9340 Castlegate Drive, Indianapolis, IN 46256. Uniden will not, however, provide crystals for Regency scanners even though they recently acquired that company.

Questions or suggestions sent to MT are printed in this column as space permits. If you prefer a reply by return mail, you must include a self-addressed, stamped envelope.

LETTERS

continued from page 3

Answering the Pope

Back in the August issue, a reader calling himself "Pope Sikola" (Pepsi-Cola, get it?) said he was letting his subscription to *Monitoring Times* lapse because we gave coverage to some of the religious stations on shortwave. (Like we could avoid them? They're spaced every 5 kHz across some portions of the bands!). This month, Mr. "P. SaCake" responds, saying that "the perfect answer to 'Pope Sikola's' letter is in II Kings, 18, 27" of the King James version of the Bible. I can't reprint it in a family magazine. You'll have to look it up for yourself.

Our old friend, Barry Rader of Fostoria, Ohio, writes in with a request. "I heard Radio Moscow's English program at 0210 UTC on 9765 kHz. Could you give me their mailing address?" Sure thing, Barry. Write to Radio Moscow, Moscow, USSR. It's that simple.

No Freebies for DJs

MT subscriber Hugh McGibboney had a bad experience. He's been a big fan of Rollye James at KOA radio -- so much so that he decided to send her a Sony ICF-2010 shortwave radio and external antenna. Much to Mr. McGibboney's surprise, the station returned the radio saying that it was against policy for a staff member to receive such an expensive gift. Hugh says the whole episode hurt his feelings.

"Why do I get the feeling that this country is getting more like Poland?" he asks. "First came the ECPA [Electronics Communications Privacy Act which makes illegal the monitoring of certain transmissions] and now this. Thank God I still have -- for now -- the choice of radio stations I can listen to."

Hugh, I really want to help. Tell 'ya what I'm going to do. Just cause I'm a good guy, I'm going to let you send that brand new Sony ICF-2010 to me.

VOA for Americans

"Why don't more Americans listen to the Voice of America?" asks Bob Skaggs, of Santa Fe, New Mexico. "Their signals are so strong that you can pick them up on a wet noodle. I listen to our State Department's polemics almost every day. But I also listen to Radio Havana, Radio Canada International and Radio Australia for their slant on the news."

The CIA Subscribes

John Henry Hart of Philadelphia wrote us a long letter reviewing a current issue of *Monitoring Times*. In it, he refers to the *MT* advertisement that reads, "The CIA Subscribes. Shouldn't you?" and asks, "How do you know the CIA subscribes to *Monitoring Times?*"

According to Subscriber Services Manager Linda Newton, the subscription requests come in plain brown envelopes that have been tampered with. And -- this is the give-away -- *they're so secretive that they cannot tell us where to send the magazine!*

Believe that? Well, OK. But it *is* true that the CIA has more subscriptions to *MT* than you can count on one hand.

Where's the Beef?

"I've been tuning around the shortwave bands for 20 years now," says John Corea of Ocean City, New Jersey, "and it still sounds the same now as it did back then. Sure," he continues, "there's a lot of quantity these days, but no more *quality*. Many staitons haven't changed any of their programming in the entire 20 years I have listened.

"Oh, there's a few very good broadcasters out there. Yes, there's a few, but very few. The rest of the stations seem to think that a shortwave broadcast should be monotonal, boring, repetitive and hard to understand. Yes. I think that may be the standard.

"Why does [Radio Canada International's] Ian McFarland sound so bored? What's the story, Ian? Does Havana really believe that people swallow their propaganda bull? And does Radio Prague think that anyone actually *records* the music that they play?

"And what's the deal with this Superpower KUSW, broadcasting 'from the west to the world'? It doesn't sound like talk to the world, it sounds like selling to the U.S. Talk about low content -- there's *no* content at KUSW.

"Don't get me wrong. I love shortwave and always will. I love being able to tune in to news directly from the source -- even if the source is unreliable. It just seems as though what's on the air is more of the old stuff."

Surprise, John. You haven't been asleep for 20 years. What you're hearing *is* the same old stuff, brought to you courtesy of the world's most stagnant industry: shortwave broadcasting. As for McFarland *Shortwave Listener's Digest* program, let's be frank. Ian's not the draw. Glenn Hauser's DX news is.

From the Helm

Don Moore, who has written an number of excellent features in recent issues of *Monitoring Times* (look for his first-hand account of Radio Belize in an upcoming issue), says he can identify the unusual Morse code signal reader Walt McCrystal heard behind 760-WJR. It is not, says Don, a jammer. "What Walt heard was the 5 kw Guanabacoa station of Cuba's Radio Reloj network. Radio Reloj is a sort of combination all-news station and WWV, all rolled into one.

"The network broadcasts news 24 hours a day, with a voice ID and time announcement followed by a pip and "RR" in Morse code at the top of every minute. The main Radio Reloj station is on 590 kHz with 30 kw and is usually not too hard to hear. The

transmitters on 910, 930, 940, 950 and 1180 kHz -- which range from 250 to 1,000 watts -- are also occasionally heard.

Harry Helms, author of the excellent *Shortwave Listening Handbook*, concurs. "The tone and Morse really cut through the QRM!"

"By the way," asks Helms, "would you be interested in printing my upcoming article on the scientific testing of the Shroud of Elvis?" Very funny, Harry. We're still getting letters on the Shroud of Turin article we ran back in December of 1987!

It's a Small World

"On a Sunday night, driving to dinner while on vacation in Saint Berthelemy, I heard Glenn Hauser's DX news on the AM radio in my rickety rental car." That event surprised the bejeebers out of Timothy Hickman of Baltimore. "The broadcast was coming from a commercial station, Radio Antilles in Monserrat, about a hundred miles away from the island on which I was staying.

"I always take my Sony 4910 along on trips to hear what's going on in the world, but it's surprising to hear Glenn Hauser on the car radio."

It shouldn't be. Glenn Hauser is on more frequencies -- and this is perhaps not even an exaggeration -- than many government operations. According to Glenn, "We are currently involved in two languages, five programs, seven stations, ten sites, 42 frequencies, 38 times (not all weekly), every day of the week." He can also appear in your mailbox. Write him for details on his publications *Review of International Broadcasting* and *DX Listener's Digest* at P.O. Box 1684, Enid, OK 73702. And tell him *Monitoring Times* sent 'ya.

Letters should be addressed to ***Letters to the Editor,*** *Monitoring Times, P.O. Box 98, Brasstown, NC 289092 and should include the sender's address and telephone number. Not all letters can be used. Those that are will often be edited and excerpted. Because of the volume of mail received, personal replies are not always possible.*

CONVENTION CALENDAR

Date	Location	Club/Contact Person
Oct 1	Huntington,WV	Tri-State ARA/ Jim Baker K8KVX P.O. Box 19, Coventry, CT 06238
Oct 1-2	Boxboro, MA	New England Div/ Eugene Hastings W1VRK 18 Churchill Rd, Marblehead, MA 01945
Oct 1-2	Biloxi, MS	Miss.State Convention/ Wayne Spearman K4JHE 133 Baywood Dr, Biloxi, MS 39532
Oct 2	Rockford, IL	Ill.State Convention/ James Miller W4JR 5581 Einor Ave, Rockford, IL 61108
Oct 2	Yonkers, IL	Yonkers ARC/ John Costa WB2AUL 195 Woodlands Ave, Yonkers, NY 10703
Oct 2	W. Liberty,IA	Muscatine & IA City ARC/ Thomas Krmer KE0Y 905 Leroy, Muscatine, IA 52761
Oct 2	Springfield,OH	Springfield IRA/ Stephen Klipfel KA8QCS 825 S. Tecumseh Rd, Springfield, OH 45506
Oct 2	Ellicott Cty,MD	Columbia ARA/ Art Goodman WA3CVG 5071 Beatrice Way, Columbia, MD 21044
Oct 7-8	Warner Rbns,GA	Central GA ARC/ Jesse Kirkham WB4KQA 110 Brown Dr, Warner Robins, GA 31093
Oct 8-9	Falls Ch., VA	DXPO 88/ John Kanode N4MM RFD 1 Box 73-A, Boyce, VA 22620
Oct 8-9	Memphis, TN	Delta Div Conv/ James Alexander 2969 Iroquois, Memphis, TN 38111
Oct 9	Queens, NY	Hall of Sci ARC/ Stephen Greenbaum 85-10 34th Ave, Jackson Hts, New York, NY 11372 Talk-in144.300,splx223.600,223.600&445.225 rptr
Oct 14-16	Houston, TX	S Texas Section Conv/ Alan Cross WA5UZB 13918 Lillja Rd, Houston, TX 77037
Oct 15	Syracuse, NY	RA of Gtr Syracuse/ Vivian Douglas Box 88, Liverpool, NY 13088
Oct 15	Gray, TN	Tri-Cities ARC/ Wendell Messimer K4ZHK 512 W. Poplar St., Johnson City, TN 37604
Oct 15-16	W Palm Bch, FL	Palm Bch Rptr Assoc/ James Schoech WD4LHF 129 Dayton Rd, Lake Worth, FL 33467
Oct 22-23	Augusta, GA	ARC of Augusta/ James Abercrombie, JR N4JA PO Box 5543, Augusta, GA 30906
Oct 28-30	Kingston, OK	Oklahoma State/ Dave Cox NB5N 1812 S. Umbrella Ct, Broken Arrow, OK 74012
Oct 29-30	Chattanooga,TN	Chattanooga ARC/ Lane Wyse N4OM 4813 Shorewood Dr, Chattanooga, TN 37416
Oct 30	Sellersville,PA	R.F. Hill ARC/ Robert Buonfiglio KA3POV 361 School House Rd., Souderton, PA 18964
Oct 30	Shelby, MI	Utica-Shelby Emerg Com Assoc/ Harold Henry 53062 Tundra Dr, Rochester, MI 48064
Nov 5	W. Monroe, LA	Twin City Ham Club/ Benson Scott AE5V 107 Contempo, West Montore, LA 71291
Nov 5-6	Lawrencville,GA	Alford Memorial RC/ Hugh Manning Jr. WB4DEB 3785 Snapfinger Rd, Lithonia, GA 30038
Nov 5-6	Pompano Bch,FL	Boward ARC/ David DeBear WA1RXB 1870 NW 42 Ter, C106, Lauderhill, FL 33313
Nov 18-20	Tampa, FL	SE Div Conv/ Frank Zeigler K4EUK 8316 Stillbrook, Tampa, FL 33615

Monitoring Times is happy to run announcements of radio events open to our readers. Send your announcement at least 60 days before the event to: Monitoring Times Convention Calendar, P.O. Box 98, Brasstown, NC 28902.

STOCK EXCHANGE

Ads for Stock Exchange must be received 45 days prior to the publication date.

NON-COMMERCIAL SUBSCRIBER RATES: $.25 per word - *Subscribers only.* All ads must be paid in advance to *Monitoring Times*. All merchandise must be personal and radio-related.

COMMERCIAL RATES: $1.00 per word payable with ad

1-3/4" SQUARE DISPLAY AD: $35 per issue, payable in advance.

Wanted: SONY "Earth Orbiter" Model 5100 -- Good working condition. Call Les Clarke [212] 354-0136 evenings.

SONY ICF-7600A and ICF-6500W, both excellent $95 each shipped UPS. COLLINS R-390A in deluxe cabinet $200. Randy, N6KLJ [707] 442-6631

For Sale: IC-R7000 continuous coverage receiver. Seldom ever used since I've had it. Same as new. Ask for Gary after five (PDT). [206] 659-1885.

For Sale: KENWOOD R5000 with voice synthesizer, mint condition, $610.00. U.S. Postal Money Order only. Free UPS. Harold Josselyn, 620 Grove Ave., Zanesville, Ohio 43701.

BEARCAT 101 switch programmable scanner, 16 channels. Works fine, oldie but goodie, $85 incl shipping. Clif Brown, 336 Ashland, Evanston, IL 60202 [312] 3328-5204.

Wanted: Car radio shortwave converter, any make, condition, or vintage. Louis Yadevia, 601 Church Lane, Upper Darby, PA 19082.

For Sale: Cellular portable telephone, RADIO SHACK model #CT300 with AC charger, extra battery pack, owners manual and box. Four months old. New $1600, sell for $1000 or make offer. Robert Pacyna, 2716 Westmar #325, Toledo, Ohio 43615 [419] 535-6979.

Wanted: Back issues of MONITORING TIMES. First issue through March 1987. Will pay $35 plus UPS cost. Michael Donworth, 1308 Shady Hollow Court, Euless, Texas 76039 [817] 267-0619.

Wanted: BADLOW WADLEY AM-SW radio. Mint only. Top $$. King Harrison, P.O. Box 24, Terrace Park, Ohio 45174. [513] 561-6677.

Wanted: RADIO SHACK PRO CB-8 radio, any condition. T. Genese, 219 North Seventh Avenue, Mount Vernon, New York, 10550.

For Sale: SONY ICF-2010 receiver, new condition, $265. SANGEAN ATS-803A receiver, mint condition in box, $150. HEATHKIT HD-1424 active antenna / preselector, new, $40. All radios are complete with manuals and accessories. Steve Raycraft WB2KKX [315] 788-9323.

Wanted: DRAKE R4-E receiver in very good condition with broadcast crystals. Jefferson Rice, Bon Air Apts. #315, 2101 Walton Way, Augusta, GA 30904.

Interested in clandestine, religious and pirate address lists or in pirate tapes and CBM-64 DX-software? Send 2 IRC's for a detailed list to Ary Boender, Lobeliastraat 33-B, 3202HR Spykenisse, The Netherlands.

Wanted: BEARCAT 250 scanner, excellent condition. [518] 274-8495 after 5pm, 150 Oakwood Ave., Troy, NY 12180.

TAP NEWSLETTER: complete set. Over 300 pages of telephone phreaking, hacking, surveillance, bugging and locksmith. Protect yourself! $60 money order. John Leonardelli, Box 722, Station A, Downsview, Onatrio, M3M-3A9.

For Sale: ICOM R7000 in mint condition with original box, manual and packing. Also includes remote control, 12VDC power kit, and F to N adapter, $935. Also, REGENCY MX-5000 which has had Grove scan speed enhancement, $235, and BEARCAT 300 with original box, $185. Will consider trade for programmable handheld for the BC-300. Call Harry McCabe at [703] 680-6345 after 6PM, or send CASHIER'S CHECK or MONEY ORDER ONLY to 4688 Joanna Court, Woodbridge, VA 22193.

PANASONIC RF-3100, like new, 500 kHz-30MHz, box, manual, paid $400; sell $225, will ship COD. John Gardner, 10990 Del Norte St. #11, Ventura, CA [805] 659-4129.

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Closing Comments

A New FCC Debacle: Scanner and Shortwave Radio Labeling

Now that the Electronic Communications Privacy Act of 1986 is fully implemented (although totally unenforced), a new specter looms on the radio horizon: cumpulsory warning labels on scanners and shortwave receivers.

Initiated by Regency Electronics (now a Uniden subsidiary), the petition was proposed as part of an effort by Regency to discourage scanner listeners from tuning in on cellular telephone correspondence in the 800 MHz band. Regency was a signatory to the cellular consortium that lobbied for the ECPA.

Ironically, the mandatory labeling proposal is opposed by the cellular telephone industry, but not for the same reasons listeners oppose it. Cellular manufacturers hope that 800 MHz scanners will be outlawed and that the labeling is too weak a measure to thwart uninvited mobile 'phone eavesdropping.

We support the Association of North American Radio Clubs (ANARC), CTIA, Bell Atlantic Mobile, Telocator of America, Nynex Mobile Communications and other commentors presently on file with the Commission who oppose mandatory labeling of scanning and shortwave receivers.

We feel that labeling a radio to prevent unlawful use would be no more effective than labeling a gun, motor vehicle or any other product which can be abused. The onus of communications privacy clearly belongs on the sender, not on the receiver.

Since radio receivers and scanners are capable of receiving both protected and unprotected communications, often on the same frequencies, a listener cannot avoid protected transmissions while tuning or scanning through frequency ranges which offer unprotected communications.

The issue can be more satisfactorily and realistically resolved by requiring an advisement to be packaged with receivers and scanners alerting the new owner of listening prohibitions as is presently done with electrical devices concerning shock hazards.

The answer is diplomatic education, not branding radio receivers and stigmatizing their owners as patently suspect.

Bob Grove
Publisher

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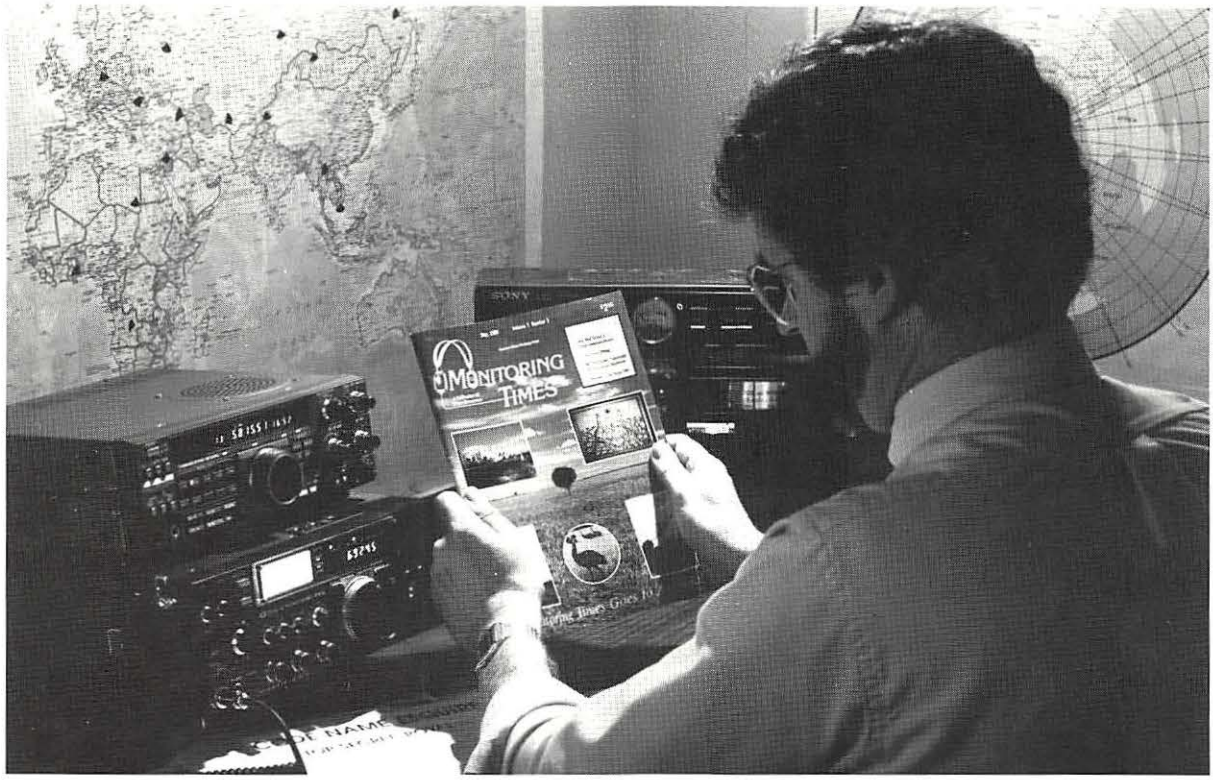

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